EDITORIAL
DOMESTIC ENGINEERING

Whole No. 1405 CHICAGO, NOVEMBER 15, 1919 Vol. 89, No. 7

TRADE EXTENSION IN RURAL DISTRICTS.

THOSE who feel that there is a limit to trade extension work will find something to think about elsewhere in this issue, as it pertains to the rural district. A survey was made of a county having a population exceeding 8,000, a district with nearly two thousand farms of which about 80 per cent are owned. The statistics show that about 20 per cent own automobiles and less than 5 per cent have hot and cold running water and bathtubs.

The knowledge that the majority of farms are badly in need of modernizing was responsible for the recent Farm Number of "Domestic Engineering," and the accompanying example of this truth adds another drop to the bucket of overwhelming evidence—and the bucket is overflowing, at that.

The plumbing and heating contractor should not take a back seat so far as the farmer and his needs are concerned. No one is more capable of serving him better, and the farmer should be impressed with this fact.

Farmers Are Not Poor.

If farmers were poor, there would be a reason for neglecting them as prospective customers, but statistics don't prove that, by any means. They are buying fine automobiles, up-to-date farm equipment, blooded stock, and luxuries for the home, but, comparatively speaking, are doing little or nothing when it comes to making their homes better from a health, comfort and sanitary standpoint.

As an individual purchaser, the farmer, on the average, is or should be, a much bigger prospect than the average city dweller. He needs more things, simply because of the lack of public utilities. And the significant part of it is that the majority can pay for what they need!

No opportunity should be lost by country plumbing or heating contractors or those in larger cities so situated to handle rural business, to develop sales during the coming winter. Much missionary work can be accomplished that will result in sales of all kinds of equipment and specialties for some time to come.

Urging practical buying at Christmas will start them thinking, and you can then carry on.

MORE COMFORT STATIONS IN 1920.

HOW much money will your city spend next year for comfort stations?—This matter is important at a time when appropriations for 1920 are being considered. It is a paramount issue for plumbing inspectors and master plumbers jointly to bring before the proper authorities.

Public comfort stations are being increasingly recognized as a municipal necessity and the facts of the matter have been brought home to many since the passing of the saloon. Private enterprise should not continue to serve the public primarily, though it will continue to do so as a supplementary measure for what it gets out of it. The establishment of rest rooms in drug stores, ice cream parlors and other establishments occupying prominent locations is being given greater consideration.

Public Benefits Most.

No self-respecting community can shirk the responsibility, and the plumbing trade need not feel guilty of serving its own interests by inaugurating a campaign for more comfort stations in 1920. True, it means the buying and installation of plumbing and heating equipment, but many other trades benefit from such construction work.

But, greatest of all, are the benefits that the general public derives from their erection. An appropriation for a suitable number of comfort stations would have the endorsement of the large majority, if not everybody in the city.

The average American municipality is woefully lacking in such conveniences, and it's about time we woke up!

Our larger cities, at the present time, are being visited by prominent delegations of Europeans—from Britain, France, Belgium, Italy, etc. They go back home amazed at American industry, efficiency and resourcefulness, but when it comes to comfort stations, many of them can get some satisfaction from the knowledge that, anyway, America doesn't lead in all things.

Is there any reason why we cannot lead the world in comfort stations, too?

Let's get busy, without delay, for more comfort stations in 1920!

REMINISCENCES *of an* OLD-TIME PLUMBER

The Days of Lead, Though They Are Dead, Proved Men Worked Both with Hands and Head

By C. O. Langston

PLUMBERS are very much like a family of acrobats; there is always one that can do something the balance of them cannot do, and win more applause than the rest of them.

For a number of years I worked in a plumbing shop where sixten plumbers were kept going pretty much all the time and by study I knew the characteristics of the greater number of them.

It was in the year 1886 that I began in this business. In those days they were making their own lead soil pipe, bends and traps. As time passed, I, too, made many lengths of lead pipe and for smoothness and beauty in the long soldered seams on this pipe, plumbers vied with each other. However, the greatest competition was in wiping of the joint. In this shop there was much of this work done. The water works taps were all lead as well. These lead taps were all wiped up in the shop; I as well as the others taking turns at this work. The bulk of this work fell on me, being only sixteen years of age, and having learned how to wipe a joint in our home at night after working hours, I knew the job pretty well, as I kept all this secret to myself until I was thoroughly qualified to put a good joint over, very much to the surprise of the plumber I was helping. In fact, one so young wiping such a beautiful joint was the sensation of the shop at the time, which gave me quick promotion and good wages, which you had to earn at that time. I was making $3.50 per day, the best wages before I was twenty-one years old, and believe me I knew what joy was then, for I fairly bubbled over.

The Joys of Joint Wiping.

Returning to the story of joint wiping, the solder was heated in the charcoal furnace with bellows in the shop. On buildings the charcoal stove was used, which was quite heavy for a lad to carry, and, oh, how they hurt and bruised my limbs while walking with one in my hand, following the honored journeyman who did not have to carry anything. I used to think that if I ever became a journeyman and had a helper, I would show him some consideration, which I did, and as time passed he has been shown so much consideration that we have cut him out altogether. Heating solder with a bellows furnace caused many a pot of solder to be burned and ruined unless you watched it very closely. This gave me an excellent opportunity to study the metal, and when burned I knew how to overcome it quickly by the use of sulphur and the adding of tin to the metal. However, I saw much older plumbers work and suffer, losing their temper, wishing their right arm might drop off and such other expressions without number, while trying to make good with this class of solder. They would often make the joint of this kind of metal, but they would sweat and leak when placed.

There were two plumbers in this shop known as "Silver Kings," their joints being almost perfect and as bright as silver. To them went the fine residence work. In fact, they were in great demand, and while in action at the bench were the center of attraction of those standing by. Helpers were exceedingly anxious to get with either of these men for instruction in the finish of their trades.

But one of these experts survives. He has made a success and is now in the business in South Carolina.

In addition to the regular water works connections, that were wiped up for the city, there was a lead burner engaged that did much of this work for laboratories of different kinds. Lead safes were then used under water closets and tubs.

Lead Work Makes Pretty Jobs.

Lead traps from 1¼ to 4 inches were used under the various fixtures and under a battery of fixtures such as lavatories and wash trays long lines of horizontal lead were used with traps all wiped in place, making a pretty job. The making up of the lead flush and supply pipes would require the journeyman's best efforts.

The lead grease trap, 16 inches high, 12 inches in diameter, with partition therein, a 4-inch hand hole, 12-inch wiped joints, bottom and top all wiped without a heating iron, these joints were more than 36 inches in circumference, the heat of which was obtained with one big pot of metal, after the inlet and outlet were wiped in, and the vent pipe. My, my, how the helper would spread himself in the decorations and polishing; this would make a journeyman sit up and take notice.

Lead water pipe was being rapidly discontinued, and brass and galvanized taking its place. We used boards just under the ceiling of the kitchen for running the hot and cold water pipe from boiler to the sink. The pride that was taken in this particular job was unlimited, run with a slight fall towards supply, the pipe straight and every strap and screw properly distanced.

Installing the Old-Time Fixtures.

The old zinc and copper tub! How I did like to solder them down. Practice made me perfect on this line. It was so easy to get the plug just a little higher than the metal of the tub. I remember taking such pride in putting down a tub that I would write my name and date on the bottom, and some time place a little stamp picture I had at that time, thinking I would probably take it up some day. They must have been good ones as I have never yet come to one of these.

The complicated Jennings closet valve was a conundrum of that time to the new plumber, with their rubber diaphragm with many holes and odd-looking grooves in the brass body of the valve. I have seen workmen spend much time repairing one, and before he could return to

the shop, it was reported out of order. Yet they served their day in high places, as well as the Senator and Pan closet with its flush valve, which I always liked to repair, and its bright copper pan, that I liked to solder to its lever and adjust to suit.

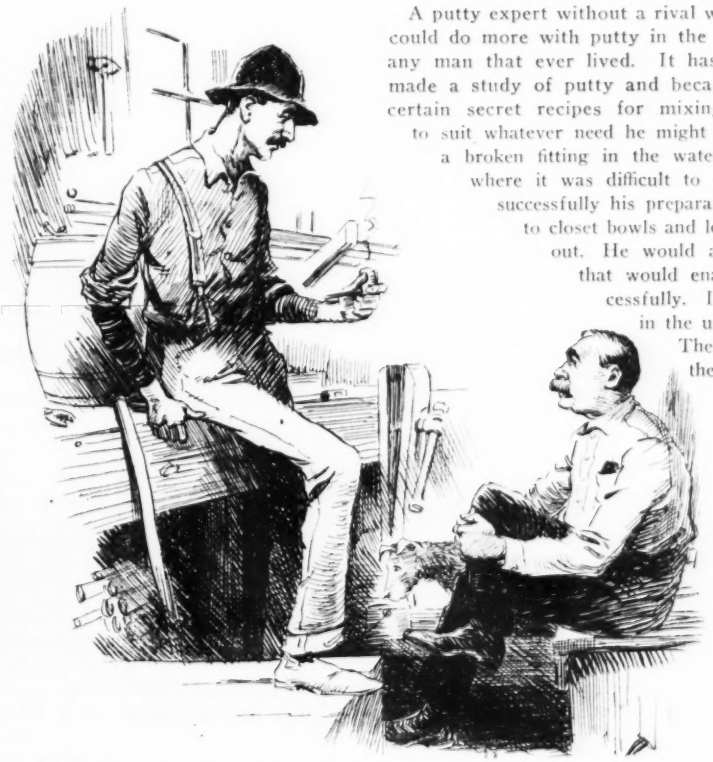
It was considered a job for an expert to set a Jennings valve or a Senator closet bowl, the mixing of the putty with litherage and red lead was done with the utmost care.

The high tank closet had just begun to come in for use. They were easy sellers and a success.

Now we find them succeeded by the low tank and the flush valve. "What next?"

The Mutt and Jeff Steam Fitters.

There were two steam fitters well identified in that shop, one very tall and the other a small man. The tall man, very quiet and dignified, enjoyed the confidence of his employers, and they were often together discussing complicated jobs. On one occasion an eight-story hotel, covering nearly a block, heated with steam was not giving satisfaction. This man made an investigation and gave an opinion as to what was required. The hotel proprietors, listening, decided that there was too much work and expense involved. After awhile they said to the employer and steam fitter: "Suppose you go ahead and do this job as you suggest, and then our company have the same trouble we have had all along. What then?" The full confidence of the employer caused him to answer instantly: "If it does not work I'LL pay for it." This incident made the fitter tower as high as he was tall in the eyes of all that knew him. As a fitter he was a success.



The Tall and Short Steam Fitters Were Often Together Discussing Complicated Jobs.

The small man in many respects had no equal. It fell to his lot to fit up big engine rooms of the larger plants. His ability in handling large pipe and fittings and making his job look neat was the object of much comment.

Unfortunately he was a great cusser, a habit, so far as I know, he never gave up, yet while we all were gathered at noon for lunch, as was quite common those days in the shop, his clear conversational voice was often heard in a natural style of good humor which he seemed to possess without limit.

The Thrill of Accomplishment.

There was a plumber who had traveled pretty much all over the country, full of life and a good talker. For some reason he had taken a peculiar fancy to me. I am sure I have never regretted it, for he got many good lead jobs. On one fine home the carpenters were pushing him so that he requested the foreman of the shop to send me over and give a hand. I, being a young journeyman with only a few little jobs to my credit, was exceedingly proud of this. So he put me to wiping up and running the lead water pipe in the basement just under the ceiling, which necessitated wiping joints just above my head while standing on a ladder at that. He made it a point not to disturb me and let me fight it out for myself. I think I never did better and felt such a thrill of joy as in accomplishing my purpose and his approbation, as on this job. The warm friendship, though we are separated by many miles, still exists and when going to the old home town I never fail to go and see my friend, who holds the same kind of a position as I do, that of an inspector.

The Putty Expert.

A putty expert without a rival worked in this shop. He could do more with putty in the plumbing business than any man that ever lived. It has been thought that he made a study of putty and became its master, learning certain secret recipes for mixing the Spanish whiting to suit whatever need he might have for it. If he had a broken fitting in the water pipe in a close place where it was difficult to remove, he would apply successfully his preparation of putty, as well as to closet bowls and lead traps that were eaten out. He would apply a poultice thereto, that would enable him to get by successfully. In short, he was an artist in the use of putty.

There were no unions among the plumbers in Georgia at this time except that of a natural fraternal spirit born of mutual respect each entertained for the other. Yet when one happened to a misfortune there was a volunteer fund subscribed, and often a nice sum realized for the sufferer.

There were a number of negro men engaged, whose duties were to dig the deep ditches and run the terra cotta drains, and others who by their industry learned to put in hand, force and lift pumps, and hydraulic rams. Many of the colored men were well liked by the plumbers and later they became plumbers. They are now, some of them at least, in business for themselves and doing well.

One whose name was John, known as the shop boy, was always full of good humor and liked by all. He knew where everything was in the place and would get it for you just for the asking. He was not averse to accepting a tip, however, and was fond of a smoke, and the promise of a drink, filled him with irrepressible joy, of which he was often the recipient through the men of the shop. John liked to sing for the amusement of his friends. He had one song that created much merriment. I think it was something like this: "I lived in the land of corn and wine, and all its riches freely mine." John would always bear down on that line where it said something about corn and wine. Needless to say, someone would toss him a cigar or the price of a drink.

The "Golden Calf."

There was one plumber engaged here that was different from all the rest, working for nearly fifteen years in the same shop. He was acknowledged the neatest and most particular plumber in the city. He was never accused of being fast; in fact, he was some time referred to as the "Golden Calf," because of his lack of speed. His fine tenor voice made him at once popular and he was the leader of a choir in a prominent church. His large acquaintance thus formed kept him in a constant demand as a plumber, which seemed to increase as time passed.

"It's Enough to Make a Preacher Curse."

The extent of his swearing under very trying circumstances was only this: "It's enough to make a preacher curse." If a joint fell apart while wiping, or the breaking of a fitting in the middle of his job, or mashing his finger black, "It's enough to make a preacher curse," is all you would hear. He did not chew tobacco, smoked very little, was quite business-like and yet jolly.

Life in the plumbing business has not been without its compensations, and we old-timers can surely look back with much pleasure on what we did in the old days. The world surely moves, and only in one direction, and that is ahead.

Work for all the unemployed in Germany for the next eight years will be provided in restoring the ruined mines of northern France, says "Vorwærts." This opinion is based on the report of the German mining commission, sent to France recently to ascertain the extent of the damage, and which has just made its findings public. "The task," says the newspaper, "is so great that it is sufficient to furnish work for every idle man in Europe and for every one else engaged in superfluous labor. The report shows the fallacy of the theory that the emigration of 10,000,000 to 15,000,000 persons from Germany is an economic necessity."

NEWS OF THE WORLD.

The Bureau of Labor Statistics have issued extensive and detailed reports on hours and earnings of employes in the coal mining industry. The figures for anthracite coal mining are based on records of 16,209 employes in twenty-two collieries situated in Pennsylvania. The figures for bituminous coal mining are based on records of 40,611 employes distributed among 201 mines located in eighteen of the most important coal producing states. Three tables are given. First and second deal with hours and earnings of employes in anthracite mines and bituminous mines respectively; third, relates to percentages of time in operation and of time worked in bituminous mines.

The Bureau of War Risk Insurance announces that the activities of the field offices of the Bureau of War Risk Insurance, Federal Board for Vocational Education, Public Health Service and the Red Cross are to be brought together under one roof in cities where regional offices already have been established.

It is announced from London that 200 firms have adopted a scheme promoted by King George for re-employment of disabled soldiers or sailors and will be entitled to use "Seal of Honor" on their note paper Names of employers who reinstate a certain percentage of their former employes now disabled will be enrolled on a newly created roll of honor.

It is announced from Cologne that the British Chamber of Commerce has ready for sale to Germany goods valued at $50,000,000.

The Bureau of Public Roads announces that while expenditures during 1919 for hard-surface highways, according to its estimates, will set a new record with a total of $138,000,000; this figure is small in comparison with the computed available total for 1920 of $633,000,000, the spending of which promises to be dependent chiefly on the quantity of material the present limited railway facilities can transport.

The Philadelphia Public Ledger states that the unprecedented demand for silver in the arts and for small coinage, coupled with scarcity caused by slowing down of mining the world over during the war, and recent strike in Tonopah camp, is causing commercial bar silver to rise to record-breaking heights. Silver bullion is quoted at $1.22⅜ an ounce.

The Senate Committee on Military Affairs has decided upon the reorganization of the army along the lines evolved by the A. E. F. bill which would provide for universal military training, a regular army of about 250,000 men and promotion by selection from a single list.

It is announced from Berlin that "workless support" bonus which thousands of men and women now are drawing in Germany, is proving a heavy drain on the treasury. It is charged that the bonus is so high that many men who in peace times were unskilled workmen, now receive more pay for idleness than if they returned to labor.

N. H. Slaughter, radio expert, addressing members of the Franklin Institute and American Institute of Electrical Engineers, in New York City, stated that wireless telephony probably never will supersede field of wire telephony, but undoubtedly will furnish abundant opportunity for service of greatest value, especially transoceanically.

The Wall Street Journal states that oil companies numbering 157, with aggregate capital of $613,610,000, were organized in October compared to $615,510,000 in September and $42,910,000 in October, 1918.

Mac Ennical, *Expert Engineer*

A Story of More Fact Than Fiction

Dropping in on Johnson about some urgent heating repairs for one of his clients, the expert finds our contractor busy figuring. Coal consumption is the thing he was struggling with and he admitted that it got him all tangled up. The expert throws some light on the subject and shows him how the probable amount of coal necessary to heat a house may be simply computed for furnaces or boilers. Incidentally, Mac Ennical points out how some business might be worked up while helping on this problem of fuel conservation.

By Alter-idem

TALK about surprises! It happened on one of my "off days." That day was surely dull and to avoid the drag of time, I had settled down in an endeavor to figure out that problem which most of my customers want solved—that of coal consumption! The figures soon became so numerous and tangled, that they figuratively danced before my eyes. I was pretty much twisted and well nigh disgusted.

I was doing the little act of crumpling up the scratch paper when I was startled by the slam of the entrance door.

Absorbed in my own thoughts, I did not realize that Mr. Mac Ennical had quietly entered and stood nearby watching my antics. Darn those rubber heels!

"Well, Johnson," he greeted me, with his usual smile, "seems I have intruded. You look as if I might have scared you. How about it?"

"Seeing is believing, mister expert," I answered. "You certainly did startle me. And besides, you must have something on your mind to call here. Can I serve you?"

Johnson Gets a Job.

"Surely, Johnson," he chuckled, "but in doing so you'll serve yourself, too. I was down at the church at the other end of the street, in answer to an urgent call to see how their heating system could be fixed up for immediate use, if possible. Seems the rear section let go and several grate bars are burned out. Knowing that you could supply the grates, I thought it best to let you know about it. And while you're at it, you can blank off the end of the boiler with a sheet metal casing and then order a new section. This will save the day for those folks, because there's a big affair on for tomorrow night. So go to it."

"Thank you, Mr. Mac Ennical, I'll be pleased to handle this work. The first things in the morning we'll be on the job."

"Very well, then," he said, and hesitated a moment. "Oh, yes! How about that tangle of figures you had before you a minute ago? What were you trying to do? Didn't know you were interested in knowing how many days it will take you to reach the moon!"

"Well, sir," I answered, "it's not that bad. What bothered me is something in the other direction, and it comes from below the earth, too. Yes, sir, black diamonds; just plain coal. What my customers want to know is how much coal they should burn in the boiler or furnace to heat their homes. They all complain that they're using too much coal and that the price is so high."

"I see," he mused, "you're lining up with this fuel conservation movement. Well, that certainly is a worthy task, and if I can help you in any way, just speak up."

"That being the case, Mr. Mac Ennical," I managed to say, "then I would like to go deeper into this matter with you. Can you spare the time now?"

"Well, said he, "as long as I am here, we might just as well get down to business."

Johnson's in the Dark.

I told him what advice I give my customers as to managing the fires in their boilers or furnaces and how to control the draft dampers. But how am I to know that they are using too much coal? That is really the question I want answered. So I asked the expert.

He sailed right in. "You can tell that by knowing how much coal they should burn if everything is done right. If the fire pot is kept full and the feed door is kept closed, and the rest done as you tell them to, then it's easy."

"That's exactly what I'd like to be shown," I volunteered. So we got ready for some figuring.

"You know," was Mac's opening, "that, on the average, the house heater gives about 45 per cent efficiency. Of course, when the price of coal is normal, this isn't felt so much. But with the changed conditions, the coal bill runs up, and, presto, everybody is complaining!"

"Surely, Mr. Mac Ennical," I agreed, "and there is where I'm weak. I can't prove the case either to the people's or my own satisfaction."

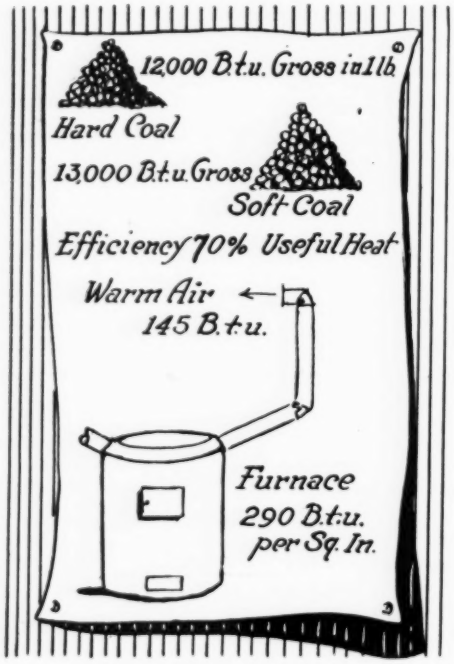
He semed to take it as a joke. "I see," he added. "Let's try to get this down to as simple a basis as possible."

Then he went on. "You can't get something for nothing. If you want to heat a house in cold weather you must supply enough heat to counteract the cold. To do this, you must generate heat, and if coal is the fuel used, then you must burn coal. It doesn't matter whether it's a steam boiler, or a hot water boiler or a warm air fur-

nace that heats the house. You must feed it the necessary coal to get the heat you require. If that coal goes through a process of complete combustion, you might even expect an efficiency of 75 per cent. This at once shows a waste of 30 per cent in the ordinary house heating conditions, where coal is burned."

Mixing Coal with Brains.

"Say then that 75 per cent is an efficiency under ideal conditions. Of course, then you couldn't expect this from a house owner or his servant that attends to the heater. Still, if they want low coal bills and at the same



Sketches and Figures Showing Heat Value of Coal and the Demands on a Furnace.

time help the nation by conserving the fuel supply, then they should endeavor to get at least 70 per cent useful heat out of their coal. This means mixing the coal with some brains, so to speak. The more care and intelligence shown in running the heater, the better the results.

"You can tell what a heater should burn to heat a given house, by doing a little figuring. The answer will correspond to your judgment, providing the figures are right and that your guess is good.

"Now, to get down to bed rock," Mac Ennical explained, "we'll have to rely on the B. t. u. Consider it as a unit of measure, the same as the foot rule or the pound. There's really no mystery in it."

"Very well, then," I said, "I'll try hard to follow you. Just before you came in I got lost in attempting to do this myself," was my modest admission.

"Good," he chuckled. "Then we'll consider that the heater is installed, and we want to find out how much coal it should burn to heat the house in good shape. Supposing hard coal is used for the fire," he suggested as he sketched a pile of it. "It's well established that 12,000 B. t. u. is a fair average heat value for a pound of anthracite. Then we're going to get 70 per cent efficiency, so we can expect only 8,400 B. t. u. of useful heat from each pound. Now if soft coal were used instead of the hard, then we could figure on 9,000 net B. t. u. to the pound."

Finishing his sketch, the expert stopped long enough to ask: "Do you follow me, or is this too steep?"

"No, indeed," I encouraged him. "I get that all right."

"Very well, then, I'll continue," he answered. And so, with the further aid of his pencil and the scratch pad, he did.

"This much established as a basis," he went on, "we can consider the different heating systems. It doesn't matter whether they are already installed or only planned on paper."

"Very well," I joined in.

Discusses the Furnace First.

"Then, let's take the warm air furnace first. It's easy enough to determine the total warm air pipe area. I have personally determined from a good many jobs that each square inch will take care of 145 B. t. u. But as the system of air heating works, the furnace must supply twice as much heat or 290 B. t. u. for each square inch of leader area. Just follow me carefully, because this is a bit different from anything you've ever seen. When I'm through, you can keep this sketch paper with the figures and check it up your own way."

"Go to it," was my answer to his warning. "I am watching carefully."

"Then," he continued, "suppose we have a house with 300 sq. in. of leaders and the furnace uses outside cold air entirely. This would mean that the furnace is taxed for 87,000 B. t. u. an hour, if everything is going at full blast."

"Just what do you mean by full blast?" I interrupted.

"Well," he answered, "when it's zero out of doors and you maintain 70 degrees in the house, the furnace is giving out all it can. Then you must have sufficient coal to supply this heat. To find the pounds of coal required for this, divide it by the useful heat in the coal. This you see gives 10⅓ lb. hard coal or about 9½ lb. soft coal that must be thoroughly burned every hour."

"Yes," I muttered.

"But as it is," he continued, "the furnace is not taxed to its limit during every hour of the heating season. If heat is required from October 15 to April 15, then you see this means six full months. However, you don't have zero weather all the time. Usually it's only in spells, and then only for several hours at a time. From observations and records I have made, I am convinced that the average work of the furnace is about 44 per cent, or something over two-fifths of the maximum capacity during an hour, and just for that reason." He then asked me point blank, "Do you know how many hours heat the heater is called on to deliver in a season?"

I was taken by surprise, but soon managed to collect my wits. "Yes," I muttered, trying to think hard at the same time. "My dope would be," I assented, "that for the six months' use the furnace will run about 3,300 hours."

"Sounds reasonable," the expert grinned, "so we'll take your guess as a basis." "Remember," he added, "we figured out before that 10⅓ lb. of hard coal would be required an hour. Then, for the heating season, the furnace would require 34,100 lb. of coal to be burned if zero weather prevailed all the time. But we already know that this is only so theoretically. Practically, about 44 per cent of this amount is required. So you see that for a house with 300 sq. in. of warm air pipes only 15,004 lb. of hard coal would have to be usefully consumed by complete burning, except, of course, for the usual ashes. This is a total of 7½ tons of coal for the season for furnace heating of the house which has a space of approximately 8,500 cu. ft."

"This looks good," I said.

After this long dissertation, which I didn't find very difficult to follow, I remarked: "Fine, Mr. Mac Ennical. This looks good to me, and so do your sketches. And besides, as I reasoned along in following you, the result certainly sounds reasonable to me."

"Well," the expert remarked, "if your customers can't do about as well as this method of figuring shows, they are certainly wasteful. At any rate, you can check up those tales they tell you, and then maybe you can do a little tinkering to fix things up for them."

"What do you mean by that, Mr. Mac Ennical?" I queried.

"Just this, Johnson," came his ready answer. "When you line up the house conditions you can see whether a heat regulator or damper control is necessary. Or a good many other small things may be wrong, and you can fix them. It is these little leaks that run up the coal bill by giving poor results from the burning of the coal. Then another thing," he added, "you might suggest a return air connection to the furnace. This alone would surely save some 20 cents on each dollar of the necessary coal bill."

"You certainly have the right dope, Mr. Mac Ennical," I ventured. "These suggestions will surely help me out. I really didn't think of them," was my admission. "Now, if I dare ask for more, could you please enlighten me on the steam and hot water proposition?"

Looking at his watch, he cheerfully answered, "Seeing I have a little more time between now and the early train home, I'll make a stab at clearing up the steam and hot water end, with you. Before doing this, I want you to have a clear understanding of what I mean by demand or tax on the heater. It doesn't matter, in that sense, whether the heater is a furnace or a boiler."

"Yes, Mr. Mac Ennical, I would certainly like a bit more light on this, because it's the first time this coal consumption proposition has been put before me the way that you have."

"I can't help that, old man," he chuckled. "At any rate, how shall I start?" he asked himself. "Oh! I guess I can clear this up," the expert averred with some delight, as he found himself. "Just come to think of it," he smiled, as he drew a leather-covered notebook from a side pocket, "this little black book has the dope. The chart's in it, too. Here it is."

The Expert's Figures, Giving the Heating Demand in Different Localities.

Mac Shows His Chart

He opened the notebook and laid it down on the desk. Lo! and behold, there was a sheet of "Greek" before me. It was a graphic chart. However, I said nothing, so he continued.

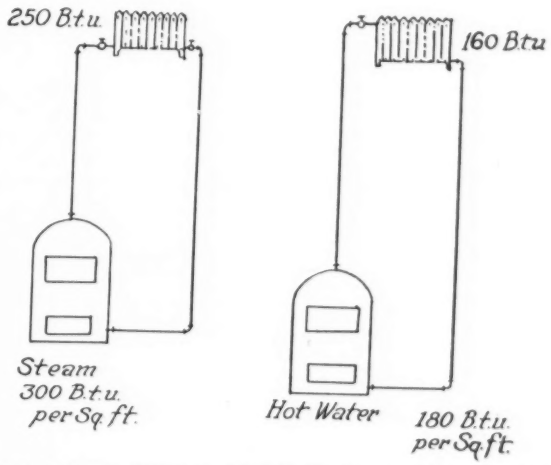
"I want you to examine this chart carefully. If you will follow me," he suggested, "it should be clear to you and then you will gain its true value by learning the meaning of it all."

"As you say, sir, I am ready," was my encouragement.

Pointing to the chart, a copy of which I procured from him some time later, the expert said, "You notice that this diagram gives the variations in outdoor temperature during the heating season. Of course, you must understand that these temperatures represent our section of the country and are therefore about right for conditions of the Middle Atlantic States. The oblique lines which are connected to make up the diagram, run from point to point. And these you will notice are marked on the lower scale at N, 6, M, 6."

"Yes, and what are these letters for?" I questioned.

"Take the N," he answered. "This is an abbreviation for midnight. As the day has 24 hours, each month has the average daily temperature for the 24 hours. For this reason 6 is given, and in the first place, it stands for 6 A. M. The other 6 means 6 o'clock in the afternoon, while M stands for noon or midday. This then shows the fluctuation in the outside temperature for each six hours of the day. Still while nature goes on in that peculiar way you must maintain the house at 70 deg. if you would have the people in it feel comfortable."



Mac Ennical's Drawings, Showing the Tax on Steam and Hot Water Boilers.

Mac Ennical smiled. "That brings us to another point. And it's an important one, too," he suggested.

"It must be, from what you say," I hazarded, "because you are certainly going along pretty seriously. What's more, I appreciate it, and will follow as carefully as I know how."

"Well, if you mean it that way," he answered, "then all right," and he went on.

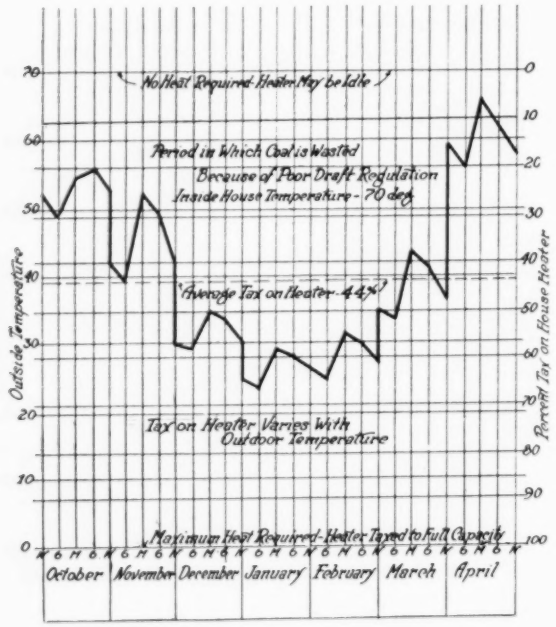
"Just look at that chart again," Mac Ennical continued. "You will notice that the bottom line corresponds to zero on the left and 100 on the right. It means just this. When the house is at 70 deg. and it's zero outside, the heater will have to supply 100 per cent of its capacity. That, then, represents the maximum demand for heat and the boiler or furnace is taxed to full capacity. That's one point. Another is the top line of the diagram. This corresponds, as you can see, to 70 deg. outside temperature and zero for the heater, which means that when the desired inside temperature is the same as that out of doors, then no heat is required.

"That's certainly logical," I volunteered.

Close Regulation of Draft Necessary.

"Very well," was his only comment. "Then you should also be able to see," he continued, "that the space between the line of zero temperature and the actual outside weather represents the variable tax on the house heating system. The diagram shows very clearly how this does vary up and down during the day and for each month of the heating season. For this reason you can

see why close regulation of the draft is very necessary if economy is to be practiced or is at all desired. If you see this, Johnson, you can also understand that the white space above the lower portion of the diagram represents the period in which waste usually takes place. This very condition gives you a chance to sell and install heat regulators or damper controls. See the point? Here's your chance to do your bit in helping conserve the coal supply and reduce your customer's coal bill."



Variations in Average Temperature During the Day for Different Months of the Heating Season.

I nodded approval.

"Remember then," he pointed out, "that as the outside temperature goes down the tax on the heater goes up if the home is kept at 70 degrees. Either with high or low temperature variations as you see them in the diagram, coal may be wasted. But this waste may be prevented if the draft is regulated accordingly. To do this by hand is almost out of the question. So an automatic control becomes a necessity. Its cost is so small, and you know that better than I do, that it pays for itself over and over by the saving in coal."

"Yes, sir," I said in real delight, "you certainly have pointed out some things that will bring me business of a kind that's worth while. I certainly do appreciate them. Even though you might think me a hog, I will take the liberty of asking for more."

"What's this now?" he asked, sort of startled, "what is it you want me to tell you?"

"Why, Mr. Mac Ennical," I explained, "it's nothing serious, though it's a point I would like to get straight on. In all you've said you mentioned zero once or twice, but your very interesting diagram, which I can now understand, does not show that zero is ever reached."

Zero Weather Infrequent.

"I see," he chuckled, and we both had a good laugh. "While you say you understand the diagram, you seem to miss the point. The weather conditions that are shown are the daily temperatures at the stated time of the day as it averages out for the entire month. In our locality here, zero occurs only three or four times during the winter and usually in January and February. Therefore you see, this averages out with the other temperatures of the month, so that it cannot show in the diagram. On this same score, by taking the variations in the weather over the entire six months, gives an average of 44 per cent as the tax on the heating system. This really represents, as nearly as can be figured, the natural demand on the heater according to weather conditions, providing the average is not greater than from zero to 70 degrees. Therefore, when you figure out the coal consumption on the basis of heating capacity installed, and multiply it by the hours the heater is used during the heating season, you get a theoretical condition. As soon as that is established, then take 44 per cent of the amount and your answer will be a close estimate of the quantity of coal a well managed heater should burn to heat the house properly. I will figure this out for you for a steam and hot water job, so you see the point more clearly."

"Shall be glad to have you do so, Mr. Mac Ennical," I answered, "and at the same time I wish to ask whether that 44 per cent holds good for all jobs?"

"Yes," replied the expert without hesitation. "That figure is right for all coal burning jobs in sections of the country where the weather conditions are the same. Now take some other parts, where the climate is different. Surely you can't expect the same result. To give you some definite information on this, I can mention St. Louis, where the average demand on the heater is only 36 per cent of the maximum. Then again in Detroit this tax on the system runs up to an average of 50 per cent."

"That's just about the dope I was after," I said bluntly.

"Well," he answered, "there is nothing like trying. If you had not raised the point, as you did, this information might have stayed with me."

"What you said makes me brave enough to ask another one,"I ventured. "Sometimes I am called on to do some work in and around Philadelphia. How about the average heat tax in that section?"

"Well, Johnson," he remarked good-naturedly, with that perpetual smile on his face, "you certainly know how to find things out. As long as I can answer this, I might say that in Philadelphia the average demand shows it to be about 41 per cent, so you can figure the possible coal consumption on this basis." And he wrote all this out in a pretty striking manner.

"Now, let's wind up," the expert suggested, "as it's getting close on to the time I must leave."

And so he went right on:

Mac Considers the Steam Job.

"Take an ordinary low pressure steam job," he said, sketching and noting down some figures. "Each square foot of direct radiation emits 250 B. t. u. However, on account of piping and other losses the boiler must furnish 300 B. t. u. to do the same work. With hot water heating about the same holds true, except for the transmission values. Each square foot of direct hot water radiation gives up 160 B. t. u., while the boiler is called on to furnish 180 B. t. u. to do this work. With this as a basis, I'll figure up a steam job with you and you can tackle a hot water system any time you please," the jovial expert suggested.

"Suppose then," he continued, "we take the same conditions of anthracite coal which gives up 8,400 B. t. u. in useful heat for each pound that is burned. Then again, the house is in our own locality and it has 250 sq. ft. of direct steam radiation, which is to run for 3,300 hours. This again gives us an average demand for the heating season of 44 per cent.

(Continued on Page 344)

OVERHAULING *the* PLUMBING *in an* OLD COLONIAL MANSION

A Discussion on Sewage Treatment—Different Ways to Purify Sewage From a Country Estate

By Robert J. Gordon

Chapter V.

WHEN Jones returned to the office he found Si in an unusually amiable mood. He was standing in the middle of the floor surveying the drawing of the septic tank, which he had just finished and which was resting against the wall. There was a trace of a smile around his lips and his eyes shone with delight.

His hands were in his pockets—something unusual for him—but he seemed ten years younger and twenty years happier.

He was admiring his handiwork and particularly the coloring of the walls, the water and the sewage siphon.

Jones knew his bookkeeper's feeling—and was loath to spoil his pleasure.

"Fine work, Si," said the plumbing contractor, laying his hand kindly on the old man's shoulder. "You have it right. The owner, Mr. Adams, or his good wife are due for some fine talk on septic tank action the next time I see them."

"I'm glad you like the drawing," said Si, still admiring it. "The colors certainly make it very plain."

"And impressive," added Jones.

Sewage Doesn't Interest the Lady.

The bookkeeper fixed his eyes on Jones. The old pessimistic expression on his face came back again. "Yes—impressive," he ventured, "providing you can interest a city lady in such a thing as sewage. It's my opinion she does not know there is such a thing—or at least, has never given it a thought in all her life of luxury. Sewage doesn't interest painted city dames—or I'm mistaken."

"You are mistaken, Si," said Jones, smilingly. "You're not up to date in your opinions of ladies. The ladies in your palmy days may have been raised to make patch work quilts and doilies and never worried about sewage and the like. But the ladies of today are different. They graudate from colleges and schools that teach them something about hygiene."

"Personal hygiene," interrupted Si.

"Yes, and public hygiene, too," continued Jones. "Anyhow, they know enough to steer clear of anything that savors of insanitary conditions. The educated woman of today is no slouch in sanitation. She wants the safest and best there is, and it's our duty as practical sanitary engineers to see that she gets it. Why, man, a ten-minute discourse on septic tanks and sewage treatment will interest Mrs. Adams beyond reason, and it will all wind up with an order to go ahead and install a modern sewage treatment system—at cost plus—see.

"But, say," he continued, "we will require another drawing to complete our sewage treatment scheme."

"What's the matter with this one?" enquired Si, timidly pointing to the septic tank and dozing chamber drawing, still leaning against the wall as if on exhibition.

"Oh, that's just sublime," Jones replied, glancing at it. "But we need a drawing showing how we will purify the effluent before it goes into the creek. The effluent from any septic tank is heavily loaded with bacteria and fine flocculent digested sewage particles, which must be removed from the liquid before it flows to the creek.

Bacteria Must Be Killed.

"That is a very small creek, you know, and sometimes during August it may be nearly dry. Therefore, in order to prevent the septic tank bacteria from forming a bacterial growth, or sewage blanket, in the creek, we must remove the bacteria and kill them in some way, somewhere between the septic tank and the creek—catch on?"

"Well—what's your plan?" asked Si.

"It's this," replied Jones, pinning a sheet of drawing paper on the board: "We will filter the effluent through coarse sand or fine gravel at a point on the septic tank discharge line."

"Ah, we will install a filter on the sewage siphon outlet, somewhere between the septic tank and the point where the roof water joins the line to the creek—the same as was shown in our second drawing?" inquired Si.

"Right again, lad," said Jones, as his pencil and tee square worked rapidly on the new drawing. "Just follow me as the lines are drawn, and I will try to explain the thing.

"In the first place, let me say I have decided to make a double filter, concealing it underground entirely. It will be in duplicate and arranged so that either filter will be in service while the other is taking a rest."

"Taking a rest?" commented Si. "If they're buried underground, ain't they both resting all the time? I swear they can't move and if they don't move, they don't need a rest."

"Now, your wrong, old boy," said Jones, still pushing the pencil vigorously. "Your theory may be all right for inanimate machines, but it does not hold good where life is concerned. You, yourself, can sit at your desk writing and figuring, etc. You can sit still for hours and not move. But you know you grow dead tired, don't you?"

"There's a Difference," Said Si.

"Yep, but I'm different," Si explained. "I'm alive and can feel myself getting tired doing nothing but thinking. There's a difference between sewage water and an office man, I hope."

Jones laughed.

"Well, I hope there is, too," he replied. "But there is a mighty strong resemblance in this particular respect.

Any man who sits unmovable for hours, doping out problems and the like, becomes congested. His head, body, bowels, blood vessels, etc., became congested and sluggish and if the inactivity is continued he will either clog up entirely or burst. He simply has to get up, change his thoughts, take exercise and finally go to bed and rest for eight hours; then, if his machinery is sound, he feels recuperated and all right the next morning. Change of action and rest re-invigorate such a man and prolong his period of usefulness.

"It's the same way with a sewage filter, only you don't have to give it a rest as often as you do the human system. A sewage filter can run for weeks or months without resting, which is in its favor. But if it is not permitted to rest somehow, sometime, it certainly will become clogged and useless.

Something About "Pep."

"In the human system there are millions of microbes that are struggling for supremacy all the time. Some give you 'pep.' Some take the 'pep' out of you. Some make you healthy and strong. Some make you sick and weak. If you overwork the good ones, you weaken them, and the evil ones will get the mastery, and you pay for your violation of nature's laws. You become congested through the effect of the evil microbes and suffer accordingly."

"What medical school did you graduate from?" Si enquired, sarcastically. "It appears to me that you're out of your element when you talk about microbes and sickness and such stuff. Do you want me to quit office work and get an outside job for my health? If so—"

"No, no," quickly interrupted Jones, "not that at all. Although it does any office man a lot of good to get out with the boys at times, and let loose. Just to get freshened up for the next day's work, you know."

"And it will do bosses, who tramp the streets all day a lot of good to stay home at nights, and—"

"Read 'Domestic Engineering,'" interrupted Jones, laughingly.

"Yes—or any other good publication," continued Si, "and rest his body and work his brains along scientific lines, and fix himself up for next day's gallivanting."

"Right, again—thou worthy oracle," commented Jones. "Every master plumber tired with his day's work, can rest charmingly and calmly with his trade paper and a cigar. It really means greater power, higher efficiency and more money to him. But look there," he pointed to the drawing, "it's all outlined in pencil now. Study it, and let me known what you think of it."

Explaining the Filters.

Jones arose. Si took his seat at the board and examined the drawing which appeared like Fig. 1 herewith.

"Rough enough," he commented.

"Is it clear?" demanded Jones.

"Yep, clear as mud," grunted Si. "Jones you had better explain it."

Jones leaned over, took up a pencil and pointed to the different parts. "The upper sketch is a plan view of one of the filters. The other will be installed alongside, but is not shown here. We may make another sketch showing their relative locations, also the connections to and from them. Then the job will surely be perfectly clear."

"Then this is only a detail drawing?" commented Si.

"Yes, that's it," replied Jones. "It's a working drawing for the men to go by.

"This filter is nothing but a hole in the ground, provided with a proper arrangement of inlet and outlet pipes, and a very respectable filtering bed of the coarsest sand we can get in the neighborhood."

"That's coarse enough then," said Si, "for we can easily find any size from fine sand to coarse gravel."

"We'll use that kind which is about half way between sand and gravel," Jones said, "and there is plenty of it on the estate, for I saw a sand and gravel bank not far from the creek when we were out there."

"But about this sketch," he continued, "the construction will be about as follows: We dig two holes about 4 feet 6 inches deep and 20 by 12 feet in plan at top. The sides will all slope down toward the bottom as shown at A. Having dug these holes and bottomed them well, the ground being a kind of clayey soil and not porous, we dig the trenches for the inlet and outlet pipes, cutting them clear into the filter holes. Then we lay the under drains B in bottom of filter hole and connect them to the outlet line C, which will be a 6-inch vitrified sewer pipe with

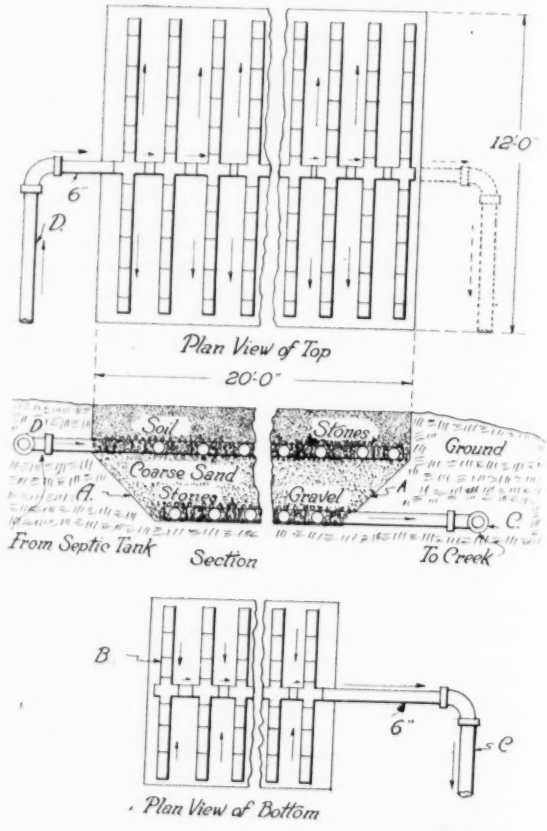


Fig. 1.

cemented joints. This pipe runs to the creek with a good pitch down hill all the way.

"The plan view, at bottom of sketch, shows the under drains laid and connected. The trench from under drains is then filled in and well tamped, the sloping face of filter hole being well puddled with the clay dirt to prevent water leakage from filter. In fact, we will have to puddle all around the under drain outlet, where it comes in through the bank. Then it will be tight.

"The under drains, proper, shown at B, are just agricultural field tile. The central or spine drain is 6-inch pipe. The branch drains or arms are 4-inch field tile. Then tile pipes inside filter are laid end to end with open joints, each joint being open about ¼ inch. Thus all water in bottom of filter will drain away freely. The

spaces between these pipes will be filled in with lose stones or the largest kind of gravel we can get. They will hold the pipes in place and support the bed of filter sand, which we will lay over these under drains."

"What's to hinder the sand from getting into the under drains and being washed out of the filter?" Si enquired, apparently grasping the situation well.

"That's easy," replied Jones. "Over these stones and over the under drains to a depth of, say, 4 to 6 inches, we will spread a bed of gravel in layers. Large size gravel will be laid first, then layers of smaller sizes, until we finish with a good level surface of very fine gravel. Over that surface we will fill in the coarse sand, and it cannot run down through the fine gravel below it. That's how we will hold up the filtering sand. We will finish the top of the filtering sand level with the bottom of the inlet pipe D. This pipe, you know, brings in the septic tank effluent, which is intended to be spread gently and uniformly over the surface of the filter bed."

"Now, I'm beginning to get the idea," said Si. "That's why you show all these criss-cross pipes on top of the sand bed."

"Correct again, old man," said Jones. "I'll make a sanitary engineer out of you yet."

Si Found Fault with Sketch and Plan

Si grunted. He did not like such compliments, and so commenced to find fault with Jones' sketch and plan. "If I were a sanitary engineer, I would make a better sketch than that, anyhow. Besides I would not lay out a filter of that kind at all."

"What would you do?" snapped Jones.

Si did not really know what he would do, but he felt he would do something different. He had to be contrary or burst. He couldn't help it. A new thought struck him. He let it go.

"I'd dispense entirely with all this nonsense," he growled, "and run the effluent into field tile laid in trenches, where digging is good and the ground is porous."

"Bright idea, old man. I knew I'd make a sanitary engineer out of you," exclaimed Jones. "But tell me where you will get the ground you speak of?"

"Down on the flat land near the creek. That must be all river bottom land, and you know, if you ever studied geology that river bottom land is porous and easy digging."

Jones laughed aloud. Si grew angry. "It's a fact," he continued, "these river bottom farms are all good soil, and I've seen lots of 'em."

"Yea, yea. So have I," said Jones, "and seen good corn and onions raised on them, too. But this river bottom you have in your head is swamp. Dig down a foot and you strike water. What would you do then?"

Si hesitated, cooled down a little, looked at Jones meekly and ventured: "Well, if that's so, then conditions are changed, and maybe you're right."

The Best Plan for the Conditions.

"Yes, that's a horse of another color, ain't it? And you bet I'm right in this particular case. I know it's quite feasible to dispose of septic tank effluent the way you suggest. In fact, I've done it lots of times myself. But then conditions were right. I've laid these under drains in series of trenches called disposal fields, generally laying them in duplicate fields, so that one could be used while the other rested. But what's the use of wasting time discussing them now. Get back to the job on hand, which I believe is the best plan for the conditions we encounter on this estate.

"On top of the sand bed is laid a few inches of gravel. Then on top of that is laid the upper field tile shown in plan view in the upper portion of our drawing. The 6-inch pipe D, coming from the septic tank, is extended lengthwise through the center of the filter and its end is closed. The cross branches, which are 6 by 4 inches, feed the 4-inch laterals. All these pipes are laid perfectly level on the gravel and their joints are ¼-inch open, the same as the under drains. We will fill in between these pipes with gravel up to, say 2 inches above the top of the pipes. Then on top of the gravel we will lay a few inches of straw and finally fill in the top with the original surface

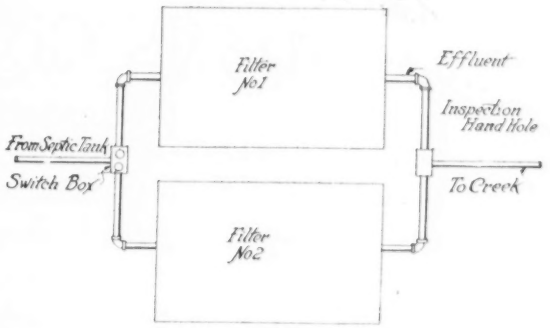


Fig. 2.

soil, which we will shovel to one side for that purpose. The rest of the soil we will use to grade up around the filter to avoid hauling.

"When the job is finished you won't know it's there except for the neat terrace and the pretty flat level lawn that will mark the location of the filters. It will be about 25 feet square and can be converted into a beautiful luxuriant floral spot."

"Or a base ball diamond for the kids. Or maybe a fishing pond for the grand lady," grunted Si.

"No fishing pond about it," exclaimed Jones. "It will be as dry as a hound's tooth, as sweet as a nut and as fair as a September morning."

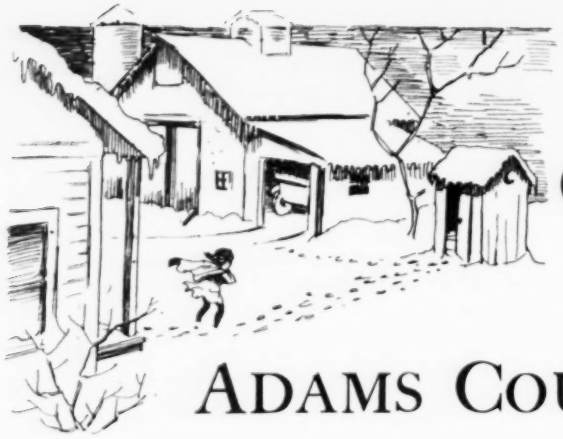
"What About Dimensions?" said Si.

"What about the dimensions," Si asked, changing the subject. "How do you arrive at them?"

"As to that," replied Jones, "I am basing my calculations on some wonderfully accurate experiments that were carried out successfully at the Columbus (Ohio) Experiment Station in 1905. These experiments demonstrated the fact that screened sewage, from which one-fourth of the suspended matter had been removed, could be filtered on three feet beds of sand, the size of the sand being .25 m.m., the rate of filtration being 100,000 gallons per acre per day. In this test there was a removal of 90 per cent of the organic matter and 98 per cent of the bacteria. I guess that's going some. It certainly is good enough for our job.

"Figuring that down, we find that 100,000 gallons per acre equals about 2.25 gallons per square foot per day. It means a depth of 3.3 inches over the entire surface of the filter bed. It also means that this 3.3 inches depth of water has 24 hours to filter through. A filtration rate of 3.3 inches in 24 hours is slow—much slower than we really will get with the very coarse sand we will use. But figuring on that basis and considering a maximum of 25 persons at 50 gallons per day per person we find that two filter beds 12 by 20 feet will take care of the maximum service.

(Continued on Page 358.)



WHAT WILL CHRISTMAS MEAN *to the* FARMERS *of* ADAMS COUNTY, WISCONSIN?

Here's a County with 1848 Farms, of Which 1543 Are Owned—Survey Shows Only 38 Farms with Hot and Cold Running Water and 46 with Bathrooms! But—20 Per Cent Own Automobiles!

FARMERS in Adams County, Wisconsin, greatly prefer automobiles to bathrooms or hot and cold running water!

This is shown in the general statistics of a survey made in that county, copy of which is reproduced herewith. While this survey was made in 1917, the County Superintendent of Schools advises "Domestic Engineering" that since the survey was made, "a very few improvements have been made."

There are 1848 farms in this county, which has a population of 8,604, according to the 1910 census. About 80 per cent of these farms—1543 to be exact, are owned by the farmers who run them. Twenty per cent of the farmers own automobiles, while less than five per cent have bathrooms and hot and cold running water.

No statistics are available regarding heating and lighting.

They Can Afford Autos—Why Not Bathrooms?

One logical argument can be drawn from the above figures, and that is, if the farmers of Adams County can afford to buy and keep up automobiles, they can undoubtedly afford modern facilities handled by the country plumber—electric pumps, bathroom and kitchen plumbing, up-to-date heating systems and lighting outfits.

Probably one of the reasons why the farmers in Adams County have so little plumbing equipment is because there are very few plumbers in that county. The county seat, Friendship, has but a population of 600, and there is only one plumber in that town, according to a well-known commercial directory.

What a chance he has to develop business around him! And Friendship is listed as "A Banking Town"!

But the opportunities to sell all kinds of equipment are not by any means confined to the lone plumber in Friendship, as there are many good-sized towns outside the county that have modern plumbing establishments.

Within a few miles of the county line are Stevens Point, Grand Rapids, Marshfield and Portage, in which there are more than a dozen plumbing shops. To these shops "Domestic Engineering" extends greetings and trusts this article may be the means of their developing unlimited business throughout Adams County.

The business is there, Plumbers of Wisconsin, so why not go after it?

This message is not confined to plumbers of the Badger State, because conditions, such as shown in the accompanying rural survey, are to be found in a great many other states.

The Season For Practical Buying.

And so, we ask, in connection with the campaign that has been running in "Domestic Engineering," urging practical buying during the coming holiday season:

What will Christmas mean to the farmers of Adams County—and the farmers in thousands of other counties in this country? And what will it mean to their wives and children?

With crops harvested, and high prices prevailing for all kinds of agricultural products, the question arises, how will these prosperous farmers spend their money? Will they buy a better car than they

now own? Will they purchase other luxuries which do not contribute to making their homes more comfortable and healthy? Or will they, through the influence of the progressive, aggressive country plumbing and heating contractor, do the things which they should, for their own benefit and more particularly, on behalf of the wives and children, as regards sanitation and proper heat and light?

It seems amazing that farmers continue to live, year after year, in the same old way, putting up with the innumerable inconveniences which would not be tolerated by city folks, whose incomes may be on a par with or even less than, those of their rural cousins.

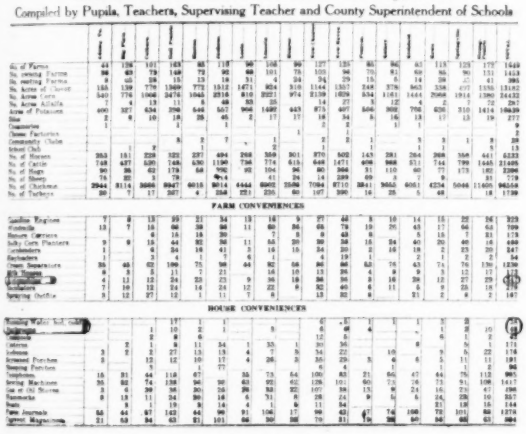
Would Your Wife Live on a Farm?

Just think of nearly two thousand farmers' wives in one county alone who have to do their daily work,

ADAMS COUNTY

General Statistics of the Rural School Survey, 1917

Compiled by Pupils, Teachers, Supervising Teacher and County Superintendent of Schools



lacking running hot and cold water facilities! How many city wives would change places with them for a week, under such conditions?

Sometimes we find out what our wives think of such propositions when we take them to the country in the summer. Two weeks of portable wash basins and water jugs, lack of running water, outside toilet "facilities," oil lamps etc., cure them of ever wanting to live in the country.

And you can't blame them, either!

That may be one of the reasons why people are content to live in a little one or two-room apartment, with all modern facilities, as compared with the insanitary, uncomfortable, nauseating conditions that are found on the average farm.

Put yourself, and your family, in the place of Mr. Farmer and Family, Mr. Plumber, and then ask yourself if there is any lack of arguments concerning the **necessity** for the modern facilities, which you can **sell him.**

On the basis of **needs,** does an automobile compare for one moment with what you have to offer?

And yet there are some townships in Adams County that haven't a single power pump or bathroom.

Is joy-riding next to godliness, or does good old-fashioned cleanliness retain its position in that respect?

If it does, then it's timely for you to cash in on it **now.**

You can do it by inaugurating a campaign for practical buying at Christmas.

Fight Mail Order House Competition.

Urge your farmer prospects to buy from you—an established, reliable plumbing and heating concern—in preference to sending their money to a mail order house. Tell them emphatically that

Value of Farm Property in Adams County.

All farm property	$8,615,324
Land	5,312,953
Buildings	1,853,165
Implements and Machinery	428,147
Domestic animals, poultry, etc	1,021,059
Per cent of value:	
Land	61.7
Buildings	21.5
Implements and Machinery	5.0
Domestic animals, poultry, etc	11.8
Average values:	
All property per farm	$5,125
Land and buildings per farm	4,263
Land per acre	17.2

According to reliable authority, "Adams County is a prosperous one and practically every farmer in that section is in first class condition. Their general prosperity is probably as great as any in the country."

price should not be the main consideration, and that what you sell them you have confidence in and will stand back of.

Emphasize the service that you render, as an expert in the plumbing and heating field.

Campaign Will Bring Results Now and Later.

A campaign like this is bound to bring results. Maybe you will not sell them in time for Christmas, but that will be no reason for being discouraged. Many a good sale will come along that will demonstrate that it pays to advertise.

Don't overlook any opportunities when selling the farmer—and don't overlook directing part of your appeal to his wife.

Bear in mind the tasks she has to perform **every day,** and then make a list of the specialties you can sell her that will make home life one of comfort instead of drudgery.

What you do now—in 1919—will help you in 1920.

The VENTILATION *of* SCHOOL CLASS ROOMS

First of Three Articles Treats of Factors That Determine Comfort, Viz.—Temperature, Humidity and Air Motion

By E. Vernon Hill

Chief, Health Department, Chicago, Including Heating and Ventilation; Vice-President, American Society of Heating and Ventilating Engineers.

Editor's Note: There is no problem of more vital interest than the ventilation of school class rooms. Its success or failure has considerable bearing on the health and future of those who are growing up. The subject will be fully discussed in three articles by Dr. Hill. This series, together with former articles on ventilation in different buildings, is presented that readers of Domestic Engineering may profit to the extent of understanding the different requirements, and apply such knowledge in the development of business.

SOMEONE has said that the bulwark of our democracy is the public school system, and it is evident to thoughtful persons that this statement cannot be successfully contradicted. The progress, the very existence of our democracy, depends upon the intelligence exhibited by the individual voters, and it is clearly evident that this intelligence depends in a great measure on the schooling they have received.

The school children of today are the citizens of tomorrow, and the future welfare of the state rests in their hands. We do not find that radical agitators, bolshevists or others with anarchistic tendencies have learned the three R's in the little red school house, or have attended our more advanced urbane schools. Their education, if we may dignify it by this term, has been received in some of the cities of the old world or by bitter experience and rough contact with the seamy side of life.

Development of Educational System Carries Grave Responsibility.

It is true, therefore, that the development of our educational system is one of the greatest achievements of this country, but we must not lose sight of the fact that it carries with it a grave responsibility. It is criminal to confine children in school buildings through the years necessary for their mental training unless we make every possible effort to safeguard their health during what might be called the term of their commitment.

To obtain a broad understanding of this situation we must consider human beings as primarily outdoor animals. We must consider that when they are confined within four walls for any extended period of time that they are living under conditions that are distinctly artificial. It is like transplanting the tropical plant from its natural habitat in a warm country to a colder and more rigorous climate to which it is not accustomed. We must, therefore, correct the artificial condition by artificial methods.

It is a well known fact that often a child in school will become aenemic and lose weight and show a pre-disposition or tendency to various diseases. The physician, if he is wise, immediately instructs the parents to take the child from school and allow it to play during the greater portion of the time in the open air. No one denies that the outdoor air is better for the child than the air in the average school room. What is to be done? Parents do not wish their children to grow up in ignorance, neither do they wish them to sacrifice their health to the acquirement of knowledge by confinement in the class room. The answer is evident. We must determine what the conditions are out of doors that are desirable and healthful and reproduce these conditions in the school. The question is, can this be done?

Subject Has Been Recognized and Discussed.

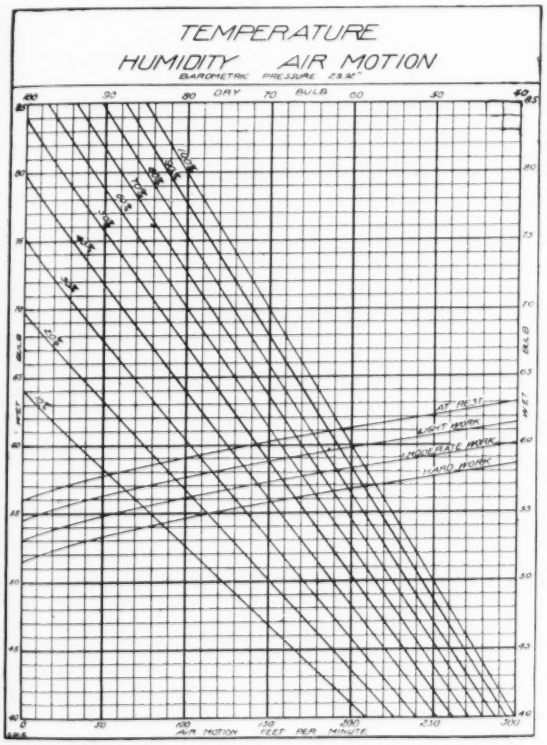
The great importance of this subject has been given quite general recognition and has given rise to some controversy as well. It has also given rise to two rather distinct classes of opinion with regard to its proper solution. Owing to the unsatisfactory results often observed from the operation of mechanical ventilating equipments in school buildings, some persons have recently advocated a return to the old method of ventilating the class room by windows alone, claiming that better results can be obtained in this way than by the use of a mechanical ventilating system. On the other hand, the engineers and others take the position that a room cannot be satisfactorily ventilated by means of windows, and insist upon the use of a mechanical system.

Open Window Versus Mechanical Ventilation.

Here is a situation that requires attention, two viewpoints apparently diametrically opposed regarding a problem of vital importance. Which is the better method, the open window or the mechanical equipment? In a preceding part of this article, the writer stated that the solution of the school ventilation problem was to determine what conditions existed out of doors that promoted the health of the children and to reproduce these conditions in the school room. Here, evidently, is an answer for the contending parties, one which will place them both on a common ground. Let us determine what the conditions are out of doors that are desirable, and then let either or both parties to the controversy prove to the interested public how or to what extent they can meet these conditions with their respective methods.

Factors That Influence Air Conditions Are Known.

It might be argued by the reader that little is known regarding the air conditions that promote health, and that this method of solving the problem is impossible from the state of our knowledge at the present time. This is not the case. Wonderful progress has been made in recent years in our knowledge of the various factors that influence air conditions, and determine its bearings on health and comfort, and we are comparatively safe in saying that the subject is at the present time an open book. "He who runs may read." It is entirely possible to state the air conditions necessary for the satisfactory ventilation of a given room, not in general and vague terms but specifically and in detail. Without going into an exhaustive discussion of the various developments in scientific ventilation in recent years, or the test methods developed in this work, let us state briefly what tests will demonstrate under ideal conditions. To do this we



The chart shows desirable conditions respecting temperature, humidity and air motion for comfort for a person at rest, doing light work, moderate work or hard work. For example, any point on the "at rest" curve will show from the top of the chart the temperature desirable; on the slanting lines the humidity; at the bottom of the chart the air motion necessary, and at the left the proper wet bulb temperature.

will make a trip, in our minds at least, to a country district on a bright June day for the purpose of our investigation.

We will assume, to start with, that the reader agrees with us that on a perfect day in June in the country air conditions are ideal and will promote to the highest degrees our health and well-being. We observe on such a day that the temperature range out of doors is from 70 to 80 degrees; even 80 is not too warm, if a gentle breeze is blowing. By means of suitable instruments we can measure the velocity of this breeze, and we find that it is moving about 1½ miles per hour, or say 150 feet per minute. Next we determine the amount of moisture in the air, and we find that the relative humidity ranges from 50 to 70 degrees, 60 being a good average. These observations give us three factors that determine comfort, namely, the temperature, humidity, or amount of moisture in the air, and the air motion. It is clearly evident that these three factors have an important relation to each other. Where the temperature is high but is accompanied by a breeze, we are just as comfortable as when the temperature is lower and no breeze is blowing.

Amount of Moisture Important.

If we study the matter a little further we will find that the third factor is also important, the amount of moisture. When the moisture content of the air is high, a humid day, as we call it, perspiration does not evaporate rapidly from the body and a high temperature is more oppressive. We must, therefore, have a low temperature with a high humidity to be comfortable. If the humidity goes down we can be equally comfortable with a much higher temperature. The temperature, the humidity and air motion, therefore, are the three physical conditions that bear a close inter-relation to each other. The Temperature, Humidity and Air Motion chart shows this relationship experimentally determined. These are the physical conditions of the air, and it is to them that we owe our feeling of comfort or discomfort, as the case may be.

There are, however, certain other conditions which we must not overlook. Let us take a sample of the country air and examine it for impurities. We place it under the microscope and examine it for dust. The country air is practically free from dust, while in the city our sample would show innumerable particles of soot, street dirt and many other substances with which it is contaminated. We also expose culture plates for bacteria. Culture plates are small glass dishes containing a nutritious substance on which the bacteria or germs in the air grow and thrive. In our clean country air we obtain no growth, the air is free from bacteria. In the city a luxuriant growth of many kinds of germ life is obtained.

We next analyze the air, chemically, for carbon dioxide gas and find about 3½ to 4 parts in each 10,000 parts of air. This is the normal amount that is necessary for plant life.

We have now examined the air as to all the conditions, both physical and chemical, that have a bearing on our health and comfort. These can be summarized as follows:

NOTE: In the next article Dr. Hill will discuss further air conditions necessary for health and comfort in a class room and show how these conditions are to be maintained.

No Longer a Barn Plumber.

The following letter was received recently from a subscriber for "Domestic Engineering." He writes:

"I wish to notify you that I have moved to ————, Mo., to be located in the plumbing and heating business, where please send my copy of 'Domestic Engineering.'

"I am no longer a barn plumber, as you have seen fit to call some of your subscribers, who had their shops at home. I felt somewhat chagrined when I read in your valuable paper about barn plumbers, but since I have bought out an old reliable stand, I guess you will consider me among the higher-ups. Anyway, I started in small, and, after a few years, have been able to expand a little."

"P. S.—I wouldn't be without 'Domestic Engineering' either in a store or barn."

Give your journeymen plumbing books for Christmas!

THE MAIN LINE AND SIDE LINE PLUMBER.

By Ole O. Yonsen.

Ole O. Yonsen.

I SEE dat dar vas a feller don in Kansas by name Hull, who start vat U call an argament in yournal of "Domestic Engineering" on dis hare game of side lines in de plumbing busyiness.

Now I tank dis bane very big question. I skule say so. I tank, by Yimminy, it bane no yoking matter, either.

An so I ust tank I skule sat me don an rite U vat I bane tanking on his hare soupject.

I see some fellers in de trade bane strong for sticking to de main line in de busyiness. By Yimminy, I say so two! Now vhy in de name of Fuller balls skule I go and svitch myself off on a dozen or more sides lines? I tank it bane dam side better to stick to main track—sanitary plumbing. I bane a main line plumber ever sance I come to dis hare country over ten years ago. An U can bet Ur sveet life dat I make some money two. U vill naver see me yumping the main track.

Now I tank, maybe it bane yust possible I bane wrong myself an dat my brains bane missing fire in von or two cylinders, but I don't tank so. No, by Yimminy, I don't tank so.

I yust vunder vat my ole friends Hank Olson and Yerry Dolan bane tanking bout dis hare side line stunt? I tank Hank skule speak up in de name of de Bon Ton De Lux Plumbing & Heating Co. If Hank is two busy to speak up, dan for de love of Mike, let Yerry do it. I skule say so.

Maybe dese hare two fellers ar handling side lines now, but I don't tank they did so at de time they vas telling about their yoys and troubles in de Day Book. I skule say not.

I vill bet a pound can of de best Copenhagen snuff, dat dis hare side line argament is not over yet. No, by Yimminy, not anny more dan dis hare dry argament. Dar vill be lots of rag shewing about it at conventions dis vinter and spring. I skule say so.

I see dat dis hare big feller—dis lion from Indiana—I mean Mister Bill Woolley, bane taking strong stand for sidelines in de plumbing busyiness. Now I tank Bill's brains bane hitting regularly on all sax cylinders for many yars. An for dat reason I tank it is good ting to listen to his line of side line argament. I know and U know that Bill bane one good feller and one broad feller. He bane a lion and not a yackass in de plumbing game. For a good many yars he bane telling a lot of the boys in de trade to qvit being yackasses and get profit instead of glory out of busyiness. Yas, Bill bane all right. I skule say so.

Maybe Bill bane rite on dis side line stunt, but I don't tank I vill yump a good ting on de main line yust for de sake of axparamenting. I skule say not. I come from Minnesota, by Yimminy, and U must show me.

De oder day a fine and fat looking brass salesman come into my shop. He vas full of de habit of dignity, and upon his brow visdom sat. I skule say so. He had a sassy silk handkerchief in his overcoat pocket, and he vas smoking a cigar dat smelt yust like burning leaves in de fall, by Yimminy. I skule say he vas von wise bird all-right. He says to me: "Ole, U bane a fool an a yackass. U have a head like brass. Vhy in the name of common sense don't U carry side lines?"

I say to him: "Oh, rats, not on your tintype. I am going to run my busyiness full steam ahead on de main line, and I am going to keep avay from side lines, yust like a hobo keeps avay from vork. I may be a fool on a yackass, but den vat ar U?"

Dis hare brass salesman, he laugh at me, an he says vhen he goes out: "Vell, Ole, I vill see U next month. I hope U vill come up for air by dat time."

I don't vant de fellers in de trade to tank I bane a nut about dis hare main line habit I got. U know der vas some professor who says ve all ban nuts—only ve differs in degree. Maybe dat bane so. Search me, by Yimminy.

Vell boys, listen hare. It bane like dis. U see I have bane two busy selling and putting in vater supply systems on farms in Minnesota to monkey round vit side lines. I tell U, it has bane keeping me on de yump. I vill bet dat I bane yust as busy as Hank Olson or Yerry Dolan ever vas. I skule say so.

I tank dat vhen a master plumber has big game like vater supply looking him right in de face, he had better forget about dis hare side line, and stick to de main line. In other vords, let him con-cen-trate all his brains on de von ting. I tank dat Rockfeller vould agree vit me. Vat vould John have bane today if he had yumped off de main line in oil. Vould he have bane oilright? I skule sat Not.

Now boys of de Side Line Club, I vill con-seed dis hare much. If a plumber hasn't got enough steam to keep on de main line, den, for the love of Mike, let him go over to de side lines for de steam. An by steam, I mean profit. An profit ve all know is noting more dan dollers and cents. Now I tank dar shute alvays be more dollers dan cents in profit. By Yimminy, I tank Hank Olson vould agree vit me on dis hare point. Hank, vat U tank?

And now I vant to say to de boys of the Main Line Club. I am vit U hart an sole. I skule say so. Tree shears for the main line plumber—Hip, Hip, Hurrah.

Vell I got to close hare. I got to gat busy and give Captain Lars Larsen an estimate on vater supply on his farm nar Minneapolis. Dis bane vat U call main line busyiness for plumber. I skule say so.

The Secretary of War directs that upon recommendation of the Joint Army and Navy Board on Aeronautics, a stated policy for use of air craft by the Army and Navy has been approved by the Secretary of War and the Secretary of Navy.

Herbert Hoover, told the House War Investigation Committee, last week, that rationing of sugar to manufacturers of candy, soft drinks and the like is coming soon. He said that this recommendation is to be made by the Sugar Equalization Board because raw sugar has risen beyond the point where it can be bought advantageously by the housewife.

Now is the time to plan your Christmas window display.

QUESTIONS & ANSWERS

TRAPPING SUCTION PIPE SHOULD NOT AFFECT DISCHARGE OF PUMP.

Editor "Domestic Engineering":—What I would like to know is: Can I lower pipe 2 ft. where it now lies on surface? Would it cause an air pocket by putting on an ell and dropping down 2 ft. outside of spring wall as per dotted lines? There are 16 inches of water over pipe in spring. Where this pipe is laid on surface is meadow land and wet. The surface water for the higher lands also flows over this ground. To grade up ground over the pipe more than 2 ft. would turn water towards the spring.

N. H. N. T. A.

If it is the intention to lower the suction pipe 2 or 3 ft. only, to protect it from frost, we see no reason why the pump should not work practically as well as at present.

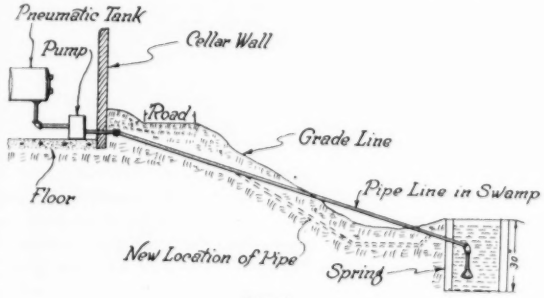


Fig. 1.

Any air in the line near spring should be dislodged by the flow of water, or at least it will make way for the water flowing through the line. The suction of the pump should be great enough to do that, if the vertical height from pump plunger to lowest point of pocket is within 28 ft.

RE-TINNING ICE CREAM FREEZERS.

Editor "Domestic Engineering":—I have a good many ice-cream freezers from one gallon to five which need re-tinning, having been through a fire. Could you give me information as to the process of pickling them before re-tinning and the best way in which to re-tin them? If you cannot give me the information desired, kindly give me the name of a paper or concern where such information may be obtained.

Montana. D. F. J.

Any tin can factory in your vicinity should be able to re-tin the ice cream freezers for you.

In case you cannot locate such a factory, we think you may be able to re-tin the cans yourself as follows:

Scrub them clean with hot water and sand, so as to remove all rust, dirt and oxide from their surfaces. Dip them in chloride of zinc. Drain off the chloride of zinc. Dip them in molten tin carefully. Give the tin time to heat the cans and adhere properly, say, 20 to 30 seconds.

Lift them out and drain the tin off them. Try one that way first, and if the process does not do, then try pickling them first in sulphuric acid, then washing off with hot water before dipping in the chloride of zinc bath.

In any case we believe you will have to scrub them with sand before pickling or dipping in the acid flux.

It will no doubt be far better to send them to a tinning factory, if you can locate one within reasonable distance.

WANTS FIGURES ON WATER WASTE.

Editor "Domestic Engineering":—One of my customers will not believe my statements about the large amount of water that is wasted by leaky plumbing as well as by carelessness in not closing faucets, when water is not used. Will you kindly give me some figures that will help me to prove that I am right?

Philadelphia. B. C. H.

Water dripping and flowing from countless faucets, when not in use, makes a flood of waste, which costs the country millions of dollars a year, and places a burden on every taxpayer. This loss is, as correspondent implies, due either to carelessness in not closing faucets or to failure to keep them supplied with proper washers. When a washer in a faucet is worn out, it is impossible to shut off the flow of water completely.

The Department of Water Supply of Clarksburg, W. Va., some time ago studied this problem in a scientific way. The results of its investigations are included in an extremely valuable booklet on "Sanitary Plumbing versus Water Waste," such as every city might profitably issue for the guidance of its citizens in ways of saving water and in the proper observance of sanitary regulations regarding sewers, plumbing, etc.

The Clarksburg water officials estimate that water just dripping through a faucet of the type most commonly used will waste in a day 15 gallons, in a week 105 gallons and in a year 5,475 gallons. The yearly cost of such a waste in Clarksburg is $1.36. This would be hardly worth noticing if only one leaky faucet were concerned, but when there are thousands of them it becomes serious.

Water leaking through an aperture $\frac{1}{32}$ of an inch in diameter wastes 264 gallons a day, 1,848 gallons a week and 96,360 gallons a year. Five hundred such faucets would mean an annual loss of more than $12,000

If the aperture in the defective faucet is $\frac{1}{16}$ of an inch the water wasted amounts to 835 gallons a day, 5,845 gallons a week and 304,775 gallons a year. The annual loss resulting from 500 such faucets would amount to over $38,000.

If the leakage space is $\frac{1}{4}$ of an inch in diameter the annual waste amounts to more than 6,000,000 gallons, worth $1,590. Water leaking through a $\frac{1}{8}$ of an inch

opening wastes during a year over 14,000,000 gallons valued at $3,618; and through a ½-inch opening the annual leakage amounts to more than 5,000,000 gallons or $6,400 worth.

How fast the waste of water runs into money can be seen by taking ½ of an inch as the average opening. Ten thousand such leaks, all of which could be put into perfect condition in a short time and with little expense, would allow nearly a quarter of a million dollars' worth of water to run to waste in a year.

All these estimates of the value of the water wasted are based on the cost of water in Clarksburg. In other cities, where the water is brought from a longer distance, or where more expensive water works systems are in use, the figures would be even higher.

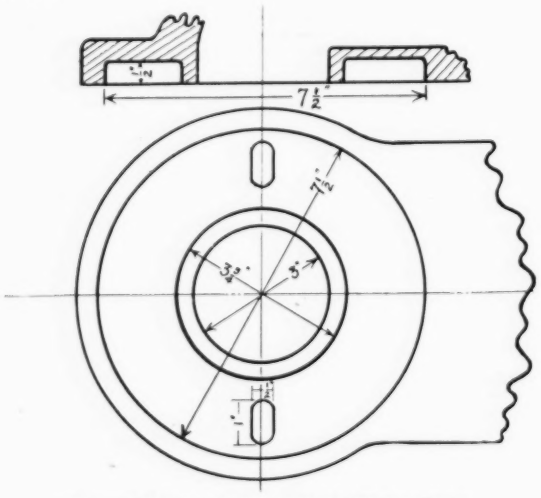
These figures should easily prove that correspondent is right, and they are enough to show that to save water should be the duty of every good citizen. The more water wasted the greater the expense to the municipality and the higher the tax rate.

Children and everybody else, who use water should be taught to turn the faucet off tight as soon as they are through with it.

SANITARY POTTERS' ASSOCIATION SHORTENS OUTLET HORN ON WATER CLOSETS.

Secretary George G. Dyer, of the Sanitary Potters' Association, announces, in Bulletin No. 324, that at the regular monthly meeting of the association held in Pittsburgh, October 13th, the following resolution was offered and adopted unanimously:

"That we shorten the outlet horn on all water closets to a level with the floor. Effective on or before April 1, 1920."



Plan of Shorter Outlet Horn on Water Closet.

The secretary was directed to prepare a blue print showing the new closet foot in detail and send one to all members, also to William J. Woolley, secretary-manager of the National Trade Extension Bureau, and to C. V. Kellogg, chairman of the National Bureau of Standardization. A plan of the water closet foot, showing the outlet horn cut to floor level, and also the earthenware flange, is reproduced herewith.

Bowling Green, Ky.—The Standard Plumbing & Heating Co. has recently started in business in this city.

The National Trade Extension Bureau

SUGGESTIONS FOR WINDOW DISPLAYS, ETC., WANTED BY BUREAU.

The following letter, requesting suggestions for window displays, etc., was sent out from The National Trade Extension Bureau, under date of November 7th:

"In order to give a more personal touch to our show window suggesting, circular letter forms, and advertising copy, we are preparing for the contracting plumber and fitter, we desire some suggestions from you covering your particular line.

"Have you any appliance or fixture that we could show in our show window displays, or touch upon in the circular letter forms and advertising copy, which we are preparing for the contractor? Of course we must necessarily omit mentioning any particular product, but our letters, advertising copy, etc., can be prepared in such a way that the name of the product can be filled in by the contractor using the forms.

"We are very anxious that you give us some suggestions as to the product or character of goods that you think we should push at this time. We will appreciate any advertising copy, circular letter forms, or other advertising matter you have prepared covering the particular appliance or fixture carried in your suggestion.

"Will you kindly take this question up with the sales manager, or the one in charge of your advertising, so that we may have a speedy response to this appeal? Do not conclude that Trade Extension is unnecessary at this time, because you are rushed with orders. Remember there is another period coming. No one knows what it has in store. Thus Trade Extension is nothing more or less than 'preparedness' for the future. At least now is the time to educate the contractor along modern business lines which will necessarily elevate him as a credit risk."

CONVENTION DATES.

January 13, 14 and 15, 1920.—The annual convention of the Iowa Master Plumbers' Association, at Fort Dodge, Iowa, with headquarters at the Wakousa Hotel.

February 2 and 3, 1920.—The twenty-fourth annual convention of the Minnesota Master Plumbers' Association, in Minneapolis, Minn.

February 16, 17 and 18, 1920.—The twenty-ninth annual convention of the Ohio State Association of Master Plumbers, at Cleveland, O., with headquarters at the Hotel Winton.

Wheat Director Julius Barnes states that the real facts in regard to wheat are that export permits have facilitated the export of wheat and wheat flour to the extent of 77,000,000 bushels in three and one-half months, an amount that has been exceeded only twice in the country's history.

Jacob Hollander, professor of political economy, at Johns Hopkins, attributes the high cost of living and social unrest to "fiat credit" brought about by borrowing from banks on short-time certificates of indebtedness, payment by credit in form of Government deposits, exemption of such deposits from reserve requirements and preferential rediscount of war paper.

The Salesman's Corner

WHAT I WOULD DO IF I WERE A SALESMAN.

By F. Edson White, Vice-President of Armour & Co.*

IT has often been said and many times demonstrated that most men who have attained eminent success have done so not by doing anything extraordinary, but by doing the ordinary extraordinarily well.

In the case of salesmanship, it is not so much a matter of talent as it is of determination and willingness to pay the price.

So, if I were a salesman—full of ambition to rise above the average and with my mind firmly made up to make a mark for myself—I would start in to do just the ordinary things that every salesman knows should be done. Not that I would avoid the unusual and spectacular—certainly not; but I never would rely upon such chance happenings to make my reputation. I believe profoundly and unshakably that the best stepping stones to success are the common-sense, everyday acts which are within the limits of the average man's capability.

Must Be Willing to Pay the Price.

But I repeat that one must be willing to pay the price. My observation of salesmen is that they are tempted to drift into the habits of an ordertaker. This is human, but deadly to ambition. They are apt to side-step the big store and the shrewd or crusty buyer; they haven't the patience to take infinite pains to build up their trade; they are unwilling to burn "midnight oil," to stock their mind with knowledge and inspiration. In a word, they are not ready to fight the game in all its aspects. They lack the heroic fiber to play for a big stake.

I say that this is very human and salesmen are—must be—exceedingly human. But, if I were a salesman, and unless I were content to remain forever in the mediocre class, I would begin by filling myself with one big purpose to make salesmanship a real profession and pay whatever it cost in effort, patience, steady, hard knocks and what not to bring me to the top.

Then I would have a definite program—a practical one—on which I could check up my progress.

Man Is Taken Largely at Face Value.

First, I would strive to make myself a capable representative of my house. As a preliminary step, I would take a measure of myself, and of the sort of impression I was most likely to convey. A man is taken largely at his face value, and as a kind of symbol of the firm for which he works. It is hard to convince anyone that your firm is scrupulous in matters of quality and other high ideals, if your clothes are slovenly or you drive up to a store in an automobile encrusted with week-old mud. I would be neat—not foppish—and make both my appearance and bearing proclaim me and my firm to the best advantage.

Being a good representative is a big quota. In one sense, it includes all that a salesman ought to do. But I am thinking particularly of general house policies, and of being able to set forth, explain and defend—where need be—the firm for which I work. This requires—particularly in a big business like our own—a vast amount of detailed information, some knowledge of economic principles, and a great deal of broad thinking. I would study with avidity every pamphlet, booklet and other publication that my firm issued, and having acquired any new facts or good arguments, I would never let them get away from me. What I could not carry in my mind, I would have on ready reference; but I would seek to carry more and more in my mind.

Education Demands Study.

Followed out to its full extent this would give me a pretty liberal business education in itself; but I never would expect to acquire an education without becoming a student. I dare say that more successes and more failures are made during the leisure hours after the evening meal than during any other time of the day. They are the legitimate hours for study, wide reading and filling one's self with the inspiration that makes business a joy as well as the means of gaining one's livelihood. I never knew a first-rater in any line who stuck literally for the eight-hour day, and who did not make his study his main hobby, and even in a sense his recreation.

If I were a salesman I would study merchandise. It is a field of unlimited scope, and as interesting as it is broad. I would learn all I could about the sources, manufacture and uses of various commodities, laying considerable stress on the uses. Some people have become rich discovering new uses of this or that—very simple uses but of universal application. I would make myself proficient in the subject of value, for these are the basis of all selling. And I never would allow my clever buyer to befuddle me as to the distinction between selling on a price-competitive basis and selling on a quality-competitive basis. One of the pitfalls of salesmen is to match goods that are manufactured strictly on a quality basis against inferior goods made to sell on a price-competitive basis.

Advertising a Mighty Force in Modern Merchandising.

Then, since I believe that advertising is one of the mightiest forces in modern merchandising, if I were a salesman I would make it my point of departure in converting my trade into established permanent customers. I would know advertising and would make the merchants I called on know it. By much reiteration, exhibition of sample advertisements and prospect-uses, I would so indoctrinate my customers in the extent and value of my company's advertising, that they could never forget it. Not in a day or a week would I expect to accomplish all this, but little by little, working on one merchant after another until I had made the rounds. If my company did not furnish the kind of prospectus, I needed, I would make one of my own. I would get the message across and keep it up-to-date, and after I had been six months or a year on a territory, I should hold myself responsible for what the merchants in that territory knew about the subject.

There is no better way than this to lay a broad foundation. Many salesmen get trivial results because they talk

*From "Advertising and Selling."

exclusively on small themes. There is a time and place for all things but the shrewd salesman has a sense of proportion. A salesman who spends all his days talking on the mealiness of his beans or the flavor of his soup, or what the price is this week, as compared with last, will never cut a dashing figure in a firm organized after the pattern of Armour & Company. There must be broad sides on the big themes—service, the saleability of established brands, the value of handling goods, with an organized and continuous advertising backing, the supreme importance of rapid turnover, and so forth. This is a kind of approach that sells a whole line, and I never would consider myself a competent salesman until I could swing a whole line in one talk as readily as I could handle one item.

If I were a salesman I would seek to give my customers that particular kind of service that would make them want to do business with me for strictly personal reasons. This is one of the never absent features of the highest type of salesmanship. I would study my customer's problems and needs and make my services as a conselor so valuable that I might always be assured of a hearty welcome whenever I called. In all the phases of the profession, I know of no greater opportunity for the salesman. It is his opportunity to capitalize himself. I would offer the sales aids that my company furnished, give advice on advertising and featuring products, make suggestions for window displays, and help in every way that I could. Here is where all that a salesman knows or can find out about merchandising is brought into use. For I know that a merchant will favor the man who is willing, anxious and able to assist.

Selling Is a Wonderfully Human Game.

Finally, by no means least of all, I would be a close observer of human nature and try to understand various types of men. Selling is a wonderfully human game. All of the top-notch salesmen I have ever known have been masters of character-reading, and this fact has been one of their greatest assets. I would be a good "mixer" even if I had to concentrate my efforts to acquire the art. I would make friends as far as possible with my customers, not overlooking in any case the clerks who hand out the goods over the counter. A friendly merchant or a friendly clerk is the best assurance you can possibly have of speedy sales for your products. And this will be especially true if you manifest an enthusiasm in how your goods are moving.

These are some of the things I would do if I were a salesman. Perhaps I have laid stress on study; this is because I believe the brain-work side of salesmanship is greatly undervalued. Few men are willing to take the trouble of acquiring a good fund of information and revolving it in their minds. This is one of the reasons why the man of average intelligence can rise conspicuously above his fellows if he puts his mind, his heart and his determination into his work.

Overbuying.

To tie up a large amount of money in slow moving stock is a poor business policy, and the profits will be eaten up by a tie-up in cash. Keep enough stock to give a reasonable selection and to supply the needs of your customers adequately. Anything behind this is a mistake. Over-buying this is a mistake. Over-buying handicaps many a man's business credit.

Any legitimate business in your line which adds to your profits without increasing your overhead expenses is worth while.

Obituary

John Porsch.

John Porsch, formerly engaged in the plumbing business at Erie, Pa., died recently at his home in that city, following a stroke of apoplexy, in his 64th year. His wife and a son survive him.

Edward N. Botsford.

Edward N. Botsford, formerly for many years a member of the plumbing firm of Botsford & English, in New Haven, Conn., died in a hospital in that city on October 31st. He had been in poor health for several years and had recently undergone an operation. Mr. Botsford was in his 71st year, having been born in Seymour, Conn., March 23, 1849. He had lived in New Haven for many years and retired from active business about ten years ago.

Edward L. Clark.

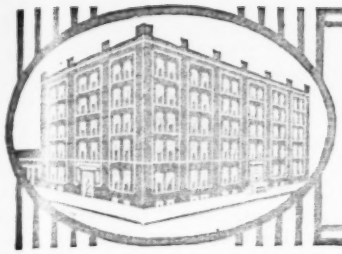
Edward L. Clark, formerly engaged in the plumbing and heating business at Buffalo, N. Y., died at his home in Oakland, Calif., October 25th, following a brief illness. Mr. Clark was a veteran of the Civil War, having left Buffalo in 1861 with the 100th New York Volunteer regiment and attaining the rank of major before the close of the war. At the conclusion of hostilities Mr. Clark returned to Buffalo and for many years conducted a plumbing and heating business there. His wife, a son and four daughters survive him.

James H. Ferguson.

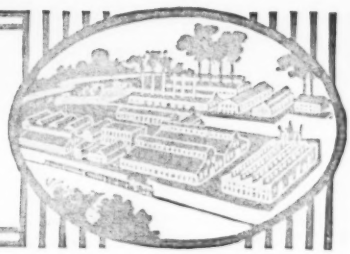
James H. Ferguson, for many years engaged in the plumbing business at Millbury, Mass., and more recently clerk of the Board of Health in that town, died at a sanitarium at Worcester, Mass., on November 6th, in his 70th year. He had been in poor health for a number of years as a result of a slight shock, but the immediate cause of death was pneumonia. Mr. Ferguson had resided in Millbury since he was 18 years of age, when he went there and learned the plumbing business with A. W. Lincoln & Co. A few years later Mr. Ferguson and Rufus R. Crane bought out the business, and on the death of Mr. Crane Mr. Ferguson became the sole owner. He gave up the business to take a position with the town health department.

William B. Gray.

William Beall Gray, of Louisville, Ky., master plumber and author of many articles and books, among them: "Plumbing Design and Installation," "House Heating," "Joint Wiping," etc., died at his home, 1327 South Twenty-second Street, in that city, on Saturday, November 8th, from bronchial tuberculosis. Mr. Gray was 53 years old and had been sick for a long time. He was known as an authority on sanitary engineering, heating and ventilating, having contributed largely to the educational activities of both local and Eastern schools of mechanical learning. He was a master plumber for over twenty years and a member of the National Association of Master Plumbers. For several years he was instructor and lecturer on plumbing in the Louisville Young Men's Institute and he also collaborated with the American School of Correspondence, Chicago, in the compiling of its encyclopædia, including heating and ventilating, etc. He is survived by his wife, three daughters and four sons. Funeral services were held from St. Charles Boromeo Church on Monday, November 10th, and interment took place in the St. Louis Cemetery.



Among the Wholesalers and Manufacturers



VIRGINIA PLUMBING SUPPLY HOUSE REORGANIZED.

The Newport Plumbing & Mill Supply Co., of Newport, Va., formerly the Noland-Clifford, Co., Inc., has been reorganized with a capital, paid in stock of $250,000. The officers of the company are: L. U. Noland, president; George H. Shute, vice-president, and A. B. Schofield, secretary. The company is enlarging its buildings and plans to carry plumbing, mill and marine supplies.

INCREASES CAPITAL STOCK AND STARTS CONSTRUCTION OF NEW PLANT.

The Cooper Foundry Co., of Atchison, Kan., has increased its capital stock from $50,000 to $175,000, and has just started the construction of a new factory building, 130 by 350 feet, of steel and concrete. The officers of this company are: F. A. Mangelsdorf, president; C. C. Cooper, vice-president and superintendent; John Heinkel, sales manager, and G. D. Elwell, secretary-treasurer and office manager.

ILLINOIS CHAPTER TO HOLD JOINT MEETING WITH WESTERN SOCIETY OF ENGINEERS.

A joint meeting between the Illinois Chapter of the American Society of Heating and Ventilating Engineers and the Western Society of Engineers will take place on Monday, November 17th. There will be a dinner at the Engineers' Club, Chicago, at 5:45 and then the gathering will retire to the club rooms of the Western Society, on the seventeenth floor of the Monadnock Building. President John Howatt, of the Chapter, will talk on "The Purchase of Coal on Specifications," from the standpoint of the purchaser, and Edward H. Taylor, engineer for Crerar, Clinch & Co., will discuss the same subject from the standpoint of the coal operator.

MINNESOTA CHAPTER OF A. S. H. & V. E. ENTERTAINS DIRECTOR JOHN R. ALLEN.

Director John R. Allen, of the Research Department of the American Society of Heating and Ventilating Engineers, was honor guest at a banquet given by the Minnesota Chapter of the American Society of Heating and Ventilating Engineers, on Monday evening, November 3rd, at the Elks Club, Minneapolis.

The members of the Minnesota Chapter presented to the Dean, a beautiful solid gold fountain pen and pencil as a small token of appreciation for the effective work performed by him in the upbuilding of the Minnesota Chapter since its inception.

H. Meyer, of the C. L. Pillsbury Co., who made the presentation, voiced the sentiments of every member of the Chapter when he stated that they were all very sorry that the Dean could only be with them occasionally in the future, but knowing that, in his new field of endeavor as Director of Research, they would hear from him regularly through the Society. In response, the Dean advised the Chapter that they were just getting nicely started in research work and that the excellent opportunity offered at the Pittsburgh Laboratory would enable them to make some very exhaustive tests of heat losses through different types and kinds of building material and assured those present that they could expect something very good along these lines in the near future.

The members of the Minnesota Chapter wish the Dean unlimited success in his new field and know that, under his guidance, the work will progress as rapidly as science and good management will permit and that the heating business in general will be greatly benefitted by being able to obtain reliable information that will be available from time to time as the tests progress.

GEORGE T. COPPINS CALLED BY DEATH.

George T. Coppins, formerly secretary of the Walworth Mfg. Co., Boston, Mass., from 1882 to 1913, passed away at his home in Newton, Mass., on October 22nd. Mr. Coppins played a prominent part in the affairs of the company and enjoyed an exceptionally wide acquaintance in the trade. He was also well known in Masonic and Grand Army circles, being a member of the famous Billy Olin's organization. He belonged to many clubs in Boston, New York and Chicago, and was an honorary member of the Pipe, Fittings and Valve Exchange Club. Although confined to his bed for many months, he drew on his reserve stock of cheerfulness and was always glad to see his friends and keep in touch with trade matters. He retired from active work in 1913, and was the first of those known as the Walworth Old Guard to drop out.

CENTRAL BRASS MFG. CO. HOLDS SIXTEENTH ANNUAL SALES CONVENTION.

The Central Brass Mfg. Co., Cleveland, Ohio, held a successful three days' sales convention on October 29th to 31st, this being the sixteenth annual meeting. This gathering was conceded to be the most interesting in the history of the company because of the introduction of several improvements in its line, and the contemplated elimination of several items which, by reason of the evolution of plumbing, have, in the company's estimation, ceased to be important. It is felt that it is just as desirable to drop goods that are not generally used as to market new equipment. With this thought in mind, it was the unanimous opinion that certain work can soon be dispensed with, inasmuch as it is felt that there is no condition under which quick-operating work will not perform the same function and do it better. There was also a unanimous opinion that all such bibbs and basin cocks should open to the right, thereby eliminating pairs and making it possible for plumbers and jobbers to get along

with smaller stocks, enabling buyers to increase their turnover and profits.

PITTSBURG WATER HEATER CO. MAKES NEW APPOINTMENTS IN SALES FORCE.

Announcement is made by the Pittsburg Water Heater Co., Pittsburgh, Pa., of the appointment of George W. Swaska as traveling sales representative in the West Virginia territory; O. A. Mayer in the western Pennsylvania field, and L. F. Rodgers, A. B. Murphy and H. C. Johns as city sales representatives for Pittsburgh and vicinity. All the above gentlemen will be under the jurisdiction of J. R. Bly, district sales manager of the Pittsburgh sales office, 110 Jenkins Arcade.

INDICATIONS ARE FOR CONTINUANCE OF PRESENT PRICES IN 1920.

Expectations for price reduction on building material and construction costs for 1920 are not justified even though the general price level in the United States appears to have reached its crest and is now receding. It must be remembered by those who attempt to calculate the future prospects of prices and costs in building and construction, that the general price level in the United States advanced far beyond the general price level in the building industry. When the armistice was signed there was a differential favorable to the construction industry of approximately 20 points, the general price level being about that many points higher than the cost of construction level.

The logic of this situation seems to be that the general level of prices on commodities other than building materials may be expected to recede until it gets down to the construction industry price level before this latter level will show a retrogression.

With the exception of lumber and steel, building materials, since the armistice have advanced very little and in the main have remained from 20 to 25 points under the general price level. Lumber, the most notable exception, touched 218 as an index figure in September, the general index for commodities in that month being 221, according to the U. S. Department of Labor. Lumber, therefore, in face of the spectacular advances since last November, remains three points under the general price level for September.

The U. S. Department of Labor's index figure for August was 226, for September 221, and the incomplete data on October from other sources justifies the expectation that the final figures will show a further decline in the general index, though of only a point or two. While this recession is on the building materials price level, in the main, remains firm, and is still considerably lower than the general price level says "The American Contractor."

No information has been developed indicating lower construction costs for 1920. It seems a reasonable assumption that the materials prices will remain about as at present with the possible exception of lumber. Steel might have declined if it had not been disturbed by the steel and coal strikes. No one suggests there may be a general recession of labor costs, which would be essential to any material recession in construction costs. In this connection it is interesting to note that J. P. H. Perry, vice-president of Turner Construction Company of New York, states steady mounting costs of building material, shortage of labor, and social unrest will inevitably cause a 15 per cent increase in cost of construction of building projects next spring.

NEW CONSTRUCTION WORK.

The following are among the most important recently awarded contracts as reported in the week's issue of "The American Contractor":

$15,000,000. Plant, Granite City, Ill. The American Coke & Chemical Co.

$3,500,000. Hotel, St. Paul, Minn. Curtis Hotel and Apartment House Construction Co.

$1,500,000. Manufacturing Group, Meriden, Conn. New Departure Manufacturing Co.

$1,000,000. Hotel, Chicago. Shoreham Hotel Building Corporation.

$600,000. Theatre and Store building, Chicago, Ascher Bros.

$500,000. Plant & Warehouse, Milwaukee, Wis. Company being organized.

$500,000. Store Building, St. Louis, Mo. Ely & Walker Dry Goods Co.

$400,000. School, Toledo, O. Board of Education.

$300,000. Warehouse, Chicago. Fairbanks, Morse Co.

$300,000. Theatre, Stores & Offices, Hammond, Ind. G. G. Gregory Theatrical Co.

$300,000. Factory, Hartford City, Ind. American Window Glass Co.

$250,000. Y. M. C. A. Building, Mt. Vernon, N. Y. Mt. Vernon Y. M. C. A.

$250,000. Factory, Detroit, Mich. Lincoln Motor Co

$225,000. Factory & Warehouse, Chicago, Edgar T. Ward & Sons.

Posed and Unposed Snapshots Taken at the Final Meet of the Western Trade Golf Association, Calumet Country Club, Burnside, Ill.—Left to Right: R. A. Widdicombe, Howard Evans, H. Illges, Frank Crumley and A. J. Ewing.—From "Domestic Engineering" Photos.

$200,000. Store & Shop Bldg., Oklahoma City, Okla. Oklahoma City Credit Corp.

$200,000. Mess Hall & Kitchen, Stapleton, S. I., N. Y., U. S. Government.

$200,000. Factory, Cleveland, O. Grant Lees Gear Co.

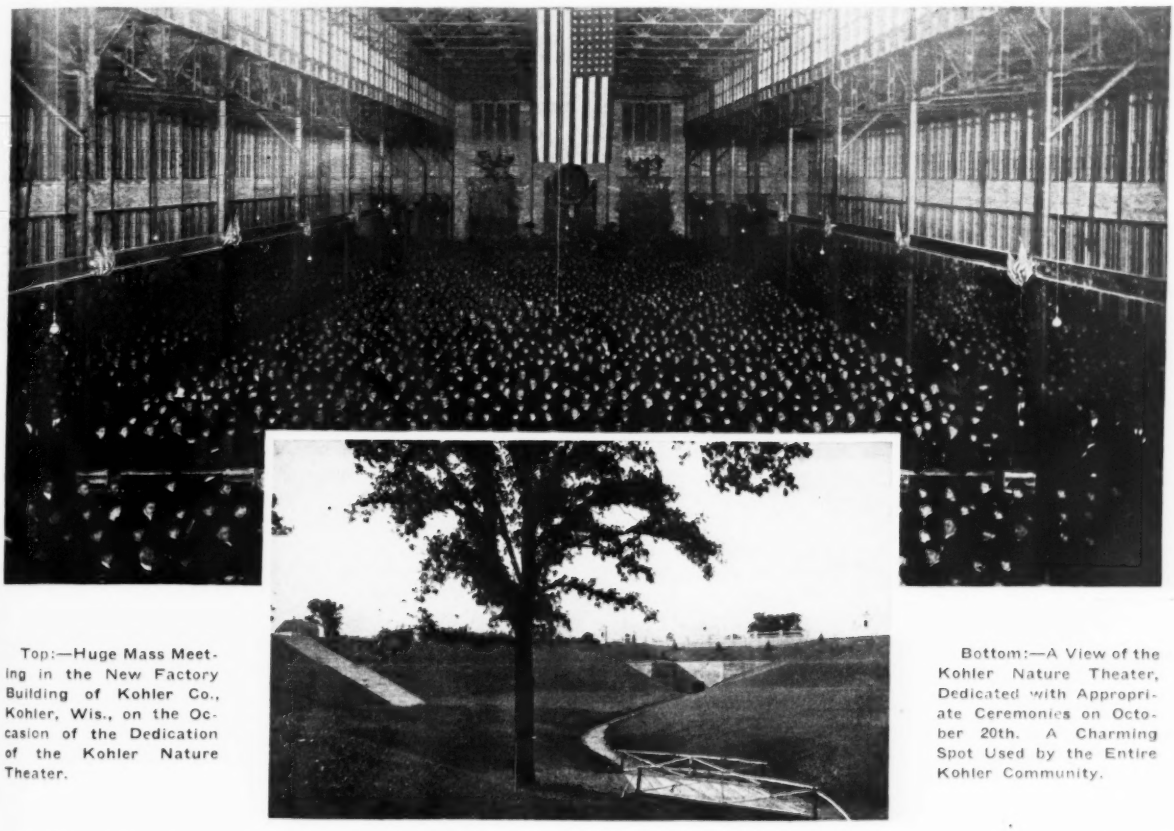
$175,000. Warehouse & Storage Plant, Peoria, Ill. National Warehouse Co.

KOHLER COMPANY DEDICATES NATURE THEATRE.

Kohler Company, Kohler, Wis., celebrated Monday, October 20th, with the dedication of the Kohler Nature Theatre, the company's plant being closed for the day to permit members of the organization to enjoy the day's activities. The program included two concerts by Sousa's Band, directed by the famous leader himself. The afternoon concert was given in the Nature Theatre, while the evening entertainment was held in the new factory building. The attendance was estimated at 8,000.

The Kohler Nature Theatre is an open-air meeting place for the use of the entire community. It is located in Ravine Park at Kohler and is flanked by an artistic viaduct which forms one of its sides. The location is a charming one, as can be gathered from the photograph reproduced herewith.

The dedication ceremonies were preceded by the playing of a spirited march, after which President Walter J. Kohler opened the program with a brief address. The dedicatory address was given by the company's advertising manager, L. L. Smith, who is president of the Kohler Civic Club. When the band struck up the Star Spangled Banner, the vast audience, standing at attention, saw Old Glory raised by Anton Brotz, president of the Village of Kohler. Several musical and vocal selections were then given to complete the afternoon program. The evening program was also a splendid success and the memories of the day will last a long time.



Top:—Huge Mass Meeting in the New Factory Building of Kohler Co., Kohler, Wis., on the Occasion of the Dedication of the Kohler Nature Theater.

Bottom:—A View of the Kohler Nature Theater, Dedicated with Appropriate Ceremonies on October 20th. A Charming Spot Used by the Entire Kohler Community.

PLANS FOR MANUFACTURES CENSUS COMPLETED.

Special effort is being put forth to make the manufactures section of the approaching fourteenth decennial census the most complete and comprehensive inventory of the Nation's manufacturing establishments ever taken, according to officials of the Bureau of the Census who have this work in charge.

The schedules which will be used in tabulating the information about the country's industrial resources have already been prepared and printed. These schedules will be mailed to every manufacturing establishment in the United States during the month of December so that factory owners and managers can familiarize themselves in advance with the questions to be answered when the records of the past year's business have been compiled. The questions relate to the calendar year 1919.

In 1914, the year the last manufactures census was taken, about 275,000 manufacturing establishments were listed by the Bureau of the Census. This time more than 300,000 establishments will be sent schedules. In addition to this it is expected that about 50,000 mines and quarries will also be reported.

The inquiries relating to manufactures, as specified by the Act of Congress providing for the census, include the name and location of each manufacturing establishment;

character of organization, whether individual, corporate or other form; character of business or kind of goods manufactured; amount of capital actually invested; number of proprietors, firm members, co-partners and officers, together with the amount of their salaries; number of employes and amount of their wages; quantity and cost of materials used in each establishment; quantity and value of products; principal miscellaneous expenses; time in operation during the year; character and quantity of power used, and character and number of machines employed.

The questions as outlined above will be covered by the general schedule which every establishment will receive. In addition to this a supplemental schedule will be sent to the sixty-eight principal industries as classified by the Bureau of the Census. This supplemental schedule will allow detailed statistics of output to be set forth under the heading "Products Manufactured."

The census of manufactures is limited to manufacturing establishments with an annual product of at least $500 conducted under what is known as the factory system, exclusive of the so-called neighborhood, household and hand industries. However, no establishment is too small to be counted by the Government if it comes within the definition of a manufacturing establishment.

The Bureau of the Census officials emphasize the fact that all information gathered by the census is strictly confidential, made so by Act of Congress, and is for general statistical purposes only. The same is true of the census of population, agriculture, mines and quarries, oil and gas wells and forestry and forest products.

Many startling figures are expected to be shown by the approaching compilation inasmuch as the industries of the country were for the most part in a subnormal condition in 1914, the year the last manufactures census was taken.

MANUFACTURERS ENDORSE THRIFT MOVEMENT.

The attitude of the successful manufacturer as to the value of thrift and careful management not only in their own business, but in the lives of their employes has been made strikingly evident by the action of the Associated Industries of Massachusetts. At a meeting recently held in Boston, the manufacturers of that state declared themselves unqualifiedly in favor of the efforts of the Treasury Department to create habits of thrift among the people of the country and endorsed especially plans to increase thrift among industrial employes.

HEALTH CONDITIONS IN EUROPE.

Sanitary conditions in New York state are far in advance of those of central European countries, according to investigations made by the State Health Department officials while in service abroad.

Lack of proper organization of health activities, inadequate water and sewerage systems, and failure to report births and deaths all have conduced to a high sickness and death rate in some of these older countries of Europe, according to a recent issue of the "Health News," the official organ of the State Health Department. These conditions are to receive the attention of the League of Red Cross Societies which will have its headquarters at Geneva.

The cost of many hospitals in France and Great Britain might have been saved had proper action been taken to drain the swamps of Italy and Salonika, according to Colonel Folks, a member of the Public Health Council of New York State. Malaria alone was responsible for the prolonged disablement of many thousands of troops.

Health methods in Germany, while apparently efficient, are not so far advanced as those of New York State in the opinion of Dr. Linsly Williams, former state deputy commissioner of health.

VOCATIONAL TRAINING FOR FOUNDRY OCCUPATIONS.

An article entitled "Vocational Training for Foundry Occupations," which will be of interest to various manufacturers in the plumbing and heating field, will be found on pages 355 to 357, of this issue.

Wm. Ross, manager of Crane Co.'s branch at Memphis, Tenn., was in Chicago this week visiting the company's main offices.

L. B. Jenks, central states manager for the Pittsburgh Valve & Fittings Co., and the Youngstown Sheet & Tube Co., has left for a trip to the home offices of the companies at Barberton and Youngstown, Ohio.

W. B. Bryar, of the Bailey-Farrell Manufacturing Co., Pittsburgh, Pa., is on a trip to eastern business centers. Before leaving on last Monday, Mr. Bryar reported demand increasing and business apparently setting out for new records.

Walter G. Hamilton, southwestern representative for the Central Brass Mfg. Co., of Cleveland, called on the trade in Kansas City, Mo., last week.

J. E. Penter, who represents the Ross Mfg. Co., of Kansas City, Mo., in Oklahoma, Kansas and Missouri, is spending a week at this company's factory, after a successful trip through his territory.

Wm. J. Hebenstreet, representing the Cooper Foundry Co., of Atchison, Kan.; the John Douglas Co., of Cincinnati, Ohio, and the Hotstream Heater Co., of Cleveland, Ohio, called this week on the trade in Kansas City, Mo.

Benjamin Nelson.

Benjamin Nelson, the new secretary of the Illinois Chapter of the American Society of Heating and Ventilating Engineers, is shown herewith in the unconventional garb of a golfer, the picture being snapped at one of the meetings of the Western Trade Golf Association. Mr. Nelson is well known in Chicago heating and ventilating engineering circles through his connection with the office of Warren Webster & Co., of Camden, N. J., with which company he has been associated for many years. "Ben" was across the ocean participating in the big scrap and now that he is back, is entering his old field with renewed enthusiasm.

C. W. Cromb, who represents the Borden Co., Warren, Ohio, in Philadelphia, Pittsburgh, Baltimore, Washington, etc., and who has lived in Philadelphia for several years, recently sold his home and is now located at 4308 Chestnut Street, Philadelphia.

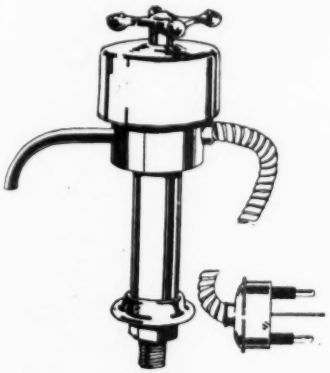
SHOP EFFICIENCY BIGGER BUSINESS

NEW EQUIPMENT AND IMPROVEMENTS

SELLING OPPORTUNITIES REPLACEMENT WORK

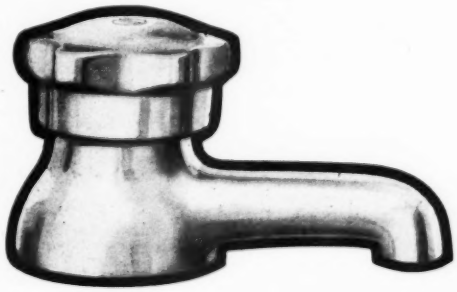
An Electric Hot Water Heater.

An electric faucet which heats water instantly has been placed on the market and is shown in the accompanying illustration. It serves the purpose of two faucets and no current is used when cold water is run as the handle automatically operates both flow and current. The heating element is submerged in water and requires replacement about every six months on direct current, and once a year on alternating current. It is adapted for moderate requirements and consumes 14 amperes on a 110-volt current. It will heat from 24 to 30 gallons per hour at 40 degrees above the initial temperature and instantly on the turn of the faucet.



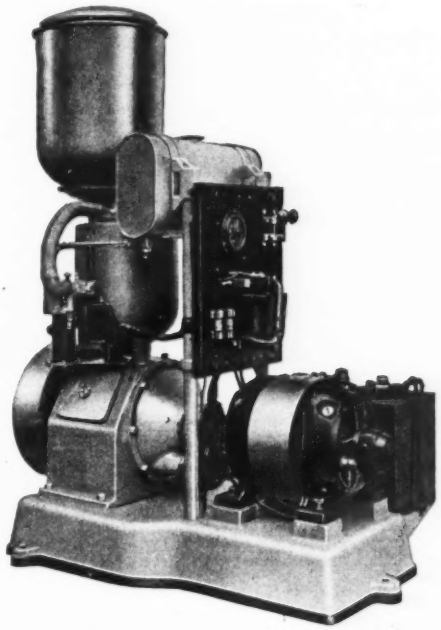
A Vitreous China Basin Cock.

An innovation in basin cocks has just been introduced with the marketing of an all-white, vitreous china product. The manufacturers of this improvement feel that it will meet a ready response from the plumbing trade because of the tendency to have everything in the bathroom pure white. Its construction is such that it is installed in the same manner as any other basin cock and its rewashering is as simple a matter as with other models. An advantage also put forth is that there is no nickel plating to be scoured off and that the finish is not only easily kept clean, but remains permanent. Regarding the durability of this basin cock, the manufacturers state that while it is not unbreakable, several tests have been made, one in particular being the dropping of a tumbler on it, which resulted in the glass breaking, leaving the basin cock uninjured.



A Non-Battery Power-Light Plant.

An electric light and power plant which eliminates the storage battery from the lighting circuit and delivers standard 110-volt curent direct from the generator, has been recently introduced and is illustrated herewith. It furnishes sufficient power to operate thirty 25-watt lamps or several labor saving devices at the same time. The plant can be started or stopped by simply pushing a wall button, located downstairs or upstairs in the house, or in the barn, thus eliminating a trip to the plant itself. Simply turning a switch closes the circuit and starts the generation of current. The starting battery is protected by an automatic switch, so that in the event that the owner fails to replenish the gasoline supply, the self starter will only operate 30 seconds and then cut out, preventing the useless discharge of the battery. The self-starter cranks the motor, which runs the generator, which in turn supplies the current. The engine is controlled by a specially designed electric governor directly connected to the carburetor. In this way the voltage is maintained constantly and the light is without flicker. When additional lamps are turned on, the governor opens up the carburetor, so that gasoline consumption is proportionate to the load. The capacity of the plant is 750 watts.



TRADE LITERATURE

Hoffman Heater Co. Issues New Catalog.

A new 30-page catalog has just been issued by the Hoffman Heater Co., Lorain, Ohio, which describes the company's line of automatic gas water heaters. In the front of the catalog are interesting chapters devoted to the solving of hot water problems in the bath room, kitchen and laundry, which are followed by illustrations of the different models, starting with the smallest size. The Hoffman mechanism is then described and illustrated and also the re-heating system. The company's new factory, which will be completed shortly, is shown on pages 28 and 29. The cover of the catalog is particularly striking, being printed in colors and showing a mountainous scene, with an Indian in the foreground in the act of heating water over a wood fire.

A copyright dispatch to the New York Sun states that Germany is planning a financial coup, through a complete revision of its monetary system, by issuing new republic money and using it to purchase old imperial coinage and paper.

J. B. WISE, Inc

Manufacturers of Plumbe

Mention DOMESTIC ENGINEE

"WISECO" Employes are Happy and Contented

DISCONTENT among employes in any kind of work breeds a multitude of troubles, but you will find only happy, contented employes in every department of the "Wiseco" Organization.

This is the women's rest room of the Water Street Plant where, during lunch hour periods, these employes may rest and recuperate, enter into social intercourse and otherwise enjoy all the benefits of comfortable surroundings.

It is this interest in the health and general welfare of our employes that keeps them happy and contented. It furthers the efforts of the "Wiseco" Organization to maintain a high standard of quality and a non-interrupted production of the goods.

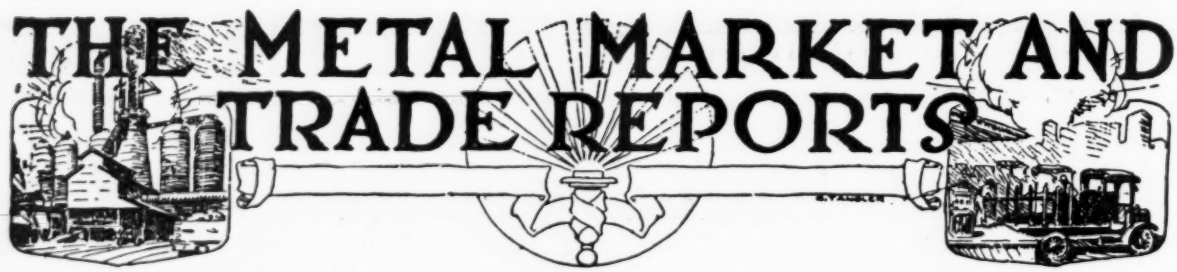
Adjoining this rest room is the women's emergency hospital where the best of expert medical and surgical care is rendered as a first aid in the event of accident or illness.

"WISECO" Products

...c., Watertown, N.Y.

...mber Sanitary Brass Goods

THE METAL MARKET AND TRADE REPORTS



Steel and Iron.

The iron and steel industry has felt practically no effects from the coal strike. The Government fuel distributers intend to give the steel mills and by-product coke plants such a degree of priority as will prevent any curtailment in production, but require that stocks be consumed first. Nearly all steel mills have stocks of coal, varying from a two weeks' to a four weeks' supply.

The steel strike has not entirely disappeared, but has made good progress in that direction during the past week. Production during October averaged about 60 per cent of the rate just before the strike, while production now is about 70 per cent. A fair guess would be that, when the strike is ended, it will have involved the loss of approximately one month's production. Steel has not become as scarce, by reason of the strike, as was expected, these forecasts of scarcity having been based upon the fact that steel was far from plentiful before the strike began, but it looks now as though the demand before the strike was due in part to a desire for material in order to stock up. It is regarded as altogether certain, however, that after the strike is settled, steel will be in heavy demand for a long time, as the demand thus far this year has involved scarcely any railroad steel, yet the railroads are certain to require considerable tonnages in the near future. Demand of this description has just begun to appear, as the Pennsylvania Railroad put out an inquiry a few days ago for 200,000 tons of rails, the order to be contingent upon the return of the railroads to their owners. For small lots of finished steel for prompt shipment, delivery premiums are the rule, but the regular market, for forward delivery, is the March 21st schedule, and this schedule probably will be held by the large conservative interests as the market for some time to come.

Pig iron is advancing at a more rapid rate. The last important sale of valley foundry iron for forward delivery were at $28.75 furnace, or $2 over the March 21st price, while for forward delivery basic and Bessemer are quotable at March 21st prices. Consumers report increasing difficulties in locating iron for prompt delivery. The coke situation continues interesting, with prices high. The report for the week ending November 1st was made late this week and showed a decrease in output for the past three weeks, but not serious.

The much stronger undertone in the scrap market has developed into enough sales at higher prices to establish the market on a higher basis and in keeping with what some observers have regarded as the true level of values for two or three weeks past. Large lots of scrap were not obtainable at the prices ruling at the beginning of the strike, but with consumers generally indisposed to make purchases the market did not promptly disclose its position. Prices for pig iron are quoted as follows:

No. 2X Philadelphia	$33.10
No. 2 Southern, Cincinnati	32.60
No. 2 Furnace, Chicago	28.75
Basic Valley, Furnace	25.75
Bessemer, Pittsburgh	29.35

Copper.

Copper prices in New York are reported purely nominal and the condition of the market is nothing but routine. The range generally subscribed to by a majority of interests was from 21 to 21½ cents per pound, with second hands reported offering at around 20¾ cents per pound. The amount of business noted from day to day is practically nil, and the hesitancy of the consumers is believed to be caused almost entirely by the unsettled conditions in the country. Export trade is also very quiet, but the coal strike and the recent longshoremen's walkout has affected this field adversely. The signing of the peace treaty is expected to relieve the situation overseas.

Tin.

Prices for tin eased off last week caused by the movement of the supplies formerly tied up at the port of New York because of the strike of the longshoremen. Spot, available for immediate shipment, was quoted at 54½ to 54¾ cents per pound, while supplies on docks and on board ships were available at a range from 53½ to 53¾ cents per pound, depending on position.

Lead.

There was little action in the lead market last week. The American Smelting & Refining Co. continues to quote 6.75 cents, New York, and 6.50 cents East St. Louis. Outsiders report that they were making sales at around 6.85 cents and 6.90 cents per pound.

Spelter.

There is a continued strong tone in the spelter market, the general price for East St. Louis being around 7.70 cents per pound. This price is for the remainder of the year, while on the first quarter the price is ten points higher. Galvanizing interests are in the market for limited supplies, and the export trade is quiet at the present time.

Other Metals.

Quotations on other metals in New York are as follows:

Aluminum (in 50-ton lots)	33 cents per lb.
Solder, No. 1	36 cents per lb.
Antimony (Chinese and Japanese)	8¾ cents per lb.

New York Old Metal Market.

The following prices are current for old metals:

	Buying.	Selling
Copper, heavy	17 to 17½ cents	18½ cents
Copper, light	15½ to 16 cents	17 cents
Brass, heavy	10½ to 11 cents	12 cents
Brass, light	7¾ to 8¼ cents	9¼ cents
Brass turnings	11 to 11¼ cents	12 cents
Lead, heavy	5⅞ to 6 cents	6¼ cents
Tea lead	4 to 4¼ cents	5 cents
Zinc	5 to 5¼ cents	6 cents
Solder joints	11 cents	12 cents
Mixed babbitt	6½ cents	7¼ cents
Composition turnings	14 to 14½ cents	15½ cents
New brass clippings	12½ to 13 cents	14 cents
Tin foil	38 to 40 cents	41 cents
Cast aluminum	25 to 26 cents	27 cents

Chicago Old Metal Market.

Chicago wholesale dealers' prices are nominally as follows:

	Buying.	Selling.
Heavy yellow brass	10¼ to 10¾ cents	11¾ cents
Brass, light	9¾ to 10¼ cents	11¼ cents
Brass borings	14¼ to 14½ cents	15 cents
Brass turnings	10¼ to 10½ cents	11 cents
Red brass	16¼ to 16¾ cents	17¾ cents
Copper, crucible	17¾ to 18 cents	19 cents
Copper, heavy	17 to 17¼ cents	18 cents
Copper, light	15¼ to 15¾ cents	16½ cents
Lead, heavy	5¼ to 5½ cents	6 cents
Tea lead	3½ cents	4 cents
Zinc	5 cents	5¾ cents
Solder joints	10½ to 11 cents	12 cents

The Pipe Market.

Quotations on less than car lots of full weight steel pipe are as follows:

	Butt Weld		Lap Weld	
	Blk.	Galv.	Blk.	Galv.
⅛ to ⅜ inch	45½	17½	.....	.....
½ inch	49½	33½	.....	.....
¾ to 3 inch	52½	37½	.....	.....
2 inch	.....	.....	45½	31½
2½ to 6 inch	.....	.....	48½	34½
7 to 12 inch	.....	.....	43½	28½

The quotations apply to all shipments from stock, regardless of quantity.

On extra strong and double extra strong steel pipe in less than car lots, quotations are as follows:

	Extra Strong				Double Extra Strong			
	Plain Ends				Plain Ends			
	Butt Weld		Lap Weld		Butt Weld		Lap Weld	
	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
⅛, ¼ and ⅜ inch	36½	11½	.....	.....	.....	.....	.....	.....
½ inch	41½	16½	.....	.....	29½	.....	.....	.....
¾ to 1½ inch	45½	20½	.....	.....	32½	.....	.....	.....
2 to 2½ inch	46½	21½	.....	.....	34½	.....	.....	.....
3 inch	46½	21½	.....	.....	.....	.....	.....	.....
2 inch	.....	.....	38½	13½	.....	.....	27½	.....
2½ to 4 inch	.....	.....	41½	16½	.....	.....	29½	.....
4½ to 6 inch	.....	.....	40½	15½	.....	.....	28½	.....
7 to 8 inch	.....	.....	34½	9½	.....	.....	21½	.....
9 to 12 inch	.....	.....	29½	.....	.....	.....	.....	.....

With threads only, the basing discount is 1½ points lower. With threads and couplings the basing discount is 3 points lower. The quotations apply to less than car lots.

Quotations on full weight genuine iron pipe, in less than car lots, are as follows:

	Butt Weld		Lap Weld	
	Blk.	Galv.	Blk.	Galv.
⅛ to ¼ inch	21½	+7½	.....	.....
⅜ inch	22½	+6½	.....	.....
½ inch	26½	6½	.....	.....
1¼ inch	31½	13½	.....	.....
¾ to 1 inch	31½	13½	.....	.....
1½ inch	31½	13½	.....	.....
2 inch	.....	.....	24½	8½
2½ to 6 inch	.....	.....	26½	11½
7 to 12 inch	.....	.....	21½	6½

These quotations are f. o. b. Pittsburgh, and apply to all shipments from stock, regardless of quantity.

On extra strong and double extra strong genuine wrought iron pipe, with plain ends, and in less than car lots, the quotations are as follows:

	Extra Strong				Double Extra Strong			
	Butt Weld		Lap Weld		Butt Weld		Lap Weld	
	Blk	Galv.	Blk.	Galv.	Blk.	Galv.	Blk	Galv.
⅛ to ⅜ inch	15½	+12½	.....	.....	.....	.....	.....	.....
½ inch	20½	+ 7½	.....	.....	.....	.....	.....	.....
¾ and 1 inch	26½	+ 1½	.....	.....	.....	.....	.....	.....
1¼ inch	26½	+ 1½	.....	.....	.....	.....	.....	.....
1½ inch	26½	+ 1½	.....	.....	.....	.....	.....	.....
2 inch	.....	.....	20½	+ 4½	.....	.....	.....	.....
2½ to 4 inch	.....	.....	22½	+ 3½	.....	.....	.....	.....
4½ to 6 inch	.....	.....	22½	+ 3½	.....	.....	.....	.....
7 to 8 inch	.....	.....	12½	+13½	.....	.....	.....	.....
9 to 12 inch	.....	.....	6½	+18½	.....	.....	.....	.....

These retail prices are f. o. b. Pittsburgh, and apply to all quantities except in car lots. With threads only, the basing discount is 1½ points lower. With threads and couplings, the basing discount is 3 points lower.

To ascertain the price in your city, deduct the proper less-than-carload freight rate from Pittsburgh to that city. Example: Base price on ¾ to 3-inch black steel pipe is 52½ per cent Pittsburgh. The less-than-carload rate to Patson is 17 cents per hundred. The price, therefore, freight allowed to Patson is:

52.5
1.7

50.8 per cent.

All other sizes to be figured on a comparative basis.

The Pipe Market in New England and in Parts of New York State.

In New York State on all points on the Hudson River, and in all of New York State south and east of Albany, in all New England and for export, quotations are as follows:

Wrought Steel Pipe.

	Black	Galv.
⅛ to ⅜ inch	38	4
½ inch	43	26
¾ to 3 inch	47	31
2 inch lap	38	23
2½ to 6 inch	42	27
7 to 12 inch	33	16

Extra Heavy.

	Black	Galv.
⅛ to ⅜ inch	31	+ 2
½ inch	37	12
¾ to 1½ inch	42	18
2 to 3 inch	43	19
2 inch lap	34	10
2½ to 4 inch	37	14
4½ to 6 inch	31	12
7 and 8 inch	25	4
9 to 12 inch	18	+ 3

Double Extra Heavy.

	Black	Galv.
½ inch	16	....
¾ to 1½ inch	21	....
2 to 2½ inch	23	....
2 inch lap	14	....
2½ to 4 inch	16	....
4½ to 6 inch	15	....
7 to 8 inch	2	....
14 to 20 inch O. D	20	....

Genuine Wrought Iron Pipe.

	Black	Galv.
⅛ to ¼ inch	12	+25
⅜ inch	13	+24
½ inch	18	+ 4
¾ to 1½ inch	25	5
1¼ inch lap	net	+19
1½ inch	12	+ 6
2 inch	16	+ 2
2½ to 6 inch	18	1
7 to 12 inch	6	+12

Extra Heavy.

	Black	Galv.
⅛ to ⅜ inch	3	+30
½ inch	13	+17
¾ to 1½ inch	21	+11
1¼ inch lap	net	+34
1½ inch	10	+21
2 inch	13	+17
2½ to 4 inch	15	+13
4½ to 6 inch	6	+14
7 to 8 inch	+ 5	+26
9 to 12 inch	+12	+33

For pipe handled through shop or cut to length, add 10 per cent to the net price of pipe.

Cutting and threading 12 inch and smaller—net list prices.

Cutting and threading 14 inch and larger—25 per cent discount from list prices.

Cutting only, two-thirds of the threading price.

These prices include cartage to point of destination, if same is within cartage limits—for domestic purposes. If outside the cartage limits, they are f. o. b. shipping point, with actual freight allowed to destination, not exceeding 20c per 100 lbs. When shipped for export, the price includes cartage to point of shipment, if same is within reasonable cartage limits—with no freight allowance.

PRICES IN PLUMBING AND HEATING FIELD SHOW UPWARD TENDENCIES.

Chicago, November 12.—The trend of the material market in the plumbing and heating field continues to be upward, and recent advances, to the extent of 7½ per cent, have been made in both boilers and radiation. A well-known manufacturer of plumbing fixtures in the middle West has also advanced prices 10 per cent on bath tubs. The raw material market and increased labor costs are the two greatest factors entering into higher production costs at this time.

Business in all lines continues strong and there are no signs of a diminished demand for some time to come. With good weather prevailing, the building program forges ahead, but it is felt that a cold snap might not be unwelcome to the different manufacturers who are striving to fill orders. Such a condition would enable them to catch up and possibly accumulate some surplus stocks.

Building permits in Chicago were featured last week with several large industrial projects. Sixty permits were issued, for a total estimated cost exceeding $2,500,000.

High Weekly Record for October Awards.

For a period of fourteen weeks from July 1st to October 6th, the aggregate of contracts awarded north of the Ohio and east of the Missouri Rivers, as reported by the F. W. Dodge Co., is $869,561,572, making an average of $62,111,542 a week during the summer season. It might be expected that October awards would show recession from this average, but each week in October has been well above the $62,000,000 mark. The October awards by weeks are as follows:

Week Ending.	Amount.
October 11	$74,057,646
October 18	67,211,723
October 25	72,830,801
November 1	68,414,906

The weekly average for the month is $70,628,769, or over $8,000,000 a week over the average four months referred to above.

Awards classified by districts for the week ending November 1st are as follows:

District.	Number.	Amount.
New York	354	$10,468,600
Boston	299	10,167,700
Philadelphia	270	9,065,850
Pittsburgh	285	10,845,395
Chicago	584	25,222,511
Minneapolis	119	2,644,850
Total	1,911	$68,414,906

Slight Recession in Prominent Cities.

Slight recessions from the preceding week are shown in the following districts: New York from $12,000,000; Philadelphia from $16,000,000; Minneapolis from $5,000,000. Boston shows a jump from $5,000,000; Chicago from $23,000,000; while Pittsburgh shows no appreciable change from its preceding week's total.

Awards classified according to type of construction are as follows:

Classification.	Number of Projects	Valuation.
Business buildings	301	$ 7,687,450
Educational buildings	36	1,855,396
Hospitals and institutions	21	1,048,800
Industrial buildings	252	16,502,910
Military and naval buildings	4	245,700
Public buildings	15	292,000
Public works and public utilities	121	7,685,740
Religious and memorial buildings	21	415,500
Residential buildings	1,100	28,504,130
Social and recreational buildings	39	4,157,280
Miscellaneous	1	20,000
Total	1,911	$68,414,906

Residential Building Leads the Way.

Residential building shows both the greatest number and the greatest estimated valuation for the week just as it has throughout the summer, but it shows a recession of almost $1,000,000 from the preceding week, thus accounting for one-fourth of the total recession. Business building for the preceding week totaled $14,500,000 and industrial buildings only $11,000,000.

Orange, Conn.—The Godfrey Co. has been incorporated to conduct a plumbing and heating business. The incorporators are R. G. Jordan, D. J. McCoy and M. A. Quinn.

Appreciation.

He was whistling at his work
With a grin upon his face.
Not a solitary shirk
Seemed to loiter in the place;
But this youth who caught my eye
Seemed to glory in his task,
So I stopped to find out why,
And this question paused to ask:

"Tell me this, my cheerful lad,
As you whistle at your bench,
Why it is you seem so glad
To employ that heavy wrench?
Why so earnestly today
Do you labor at your task?"
And he looked as though to say:
"That's a foolish thing to ask."

Then he answered with a grin
As he laid aside his wrench:
"Just today the boss came in
And he stood beside my bench
And he spoke to me like you;
Then took up this work of mine,
Looked it over, looked it through,
And then said: 'It's simply fine!'

"You can talk about your pay
And the pleasure of a raise,
But I'm telling you today
That a little word o' praise
From the man you're working for
Does a fellow lots o' good.
And it makes him, more and more,
Want to keep on sawing wood."

Edward A. Guest, in the "Chicago Evening Post.
(Copyright, 1919.)

BUREAU OF HOUSING AND LIVING CONDITIONS.

Representative Tinkham Discusses His Bill Providing for Investigation Machinery.

House Resolution 7014 which provides for the creation of a Bureau of Housing and Living Conditions in the United States was discussed by its author, Representative George Holden Tinkham of Massachusetts, at the annual convention of the American Civic Association held in Yorkship village this week.

A hearing was held upon his bill before the Committee on Public Buildings and Grounds in Washington on November 12th at 11 a. m., when many representatives of various well known business and civic associations were present and argued in its favor.

Congressman Tinkham said, in behalf of his bill:

"Revolutionists and Bolsheviki who desire and intend the destruction of modern society do not own homes. They have no fixed interest in the social order and nothing to protect from destruction.

"The relation between labor and housing is vital. Good living conditions and good housing conditions especially promote better citizenship, increase productive capacity and reduce labor turnover. The desire for a home next to the desire for food is one of the deepest of human instincts. The National Government should interest itself particularly at this time in this great social and industrial problem.

"Under the terms of my bill the proposed Bureau will be charged with investigating the housing and living conditions of the industrial population of the United States. The bill provides for research and experimentation by the Bureau with a view to the provision and publication of information to make economically practicable the elimination of slums, the improvement of living conditions, the reduction of the cost of construction of dwellings and the financing of extended home building operations without Federal appropriations. It will furthermore assist communities in making available to the utmost extent all existing housing facilities and serve as a clearing house of information on housing and living conditions.

Makes Practical Use Of Information.

"The Federal Government as a result of its war housing program, in which was expended approximately $110,000,000 to build homes for industrial workers, has accumulated a vast fund of information and experience in this connection which should be made available to every community in the United States. At the present time no Government Bureau has power to make this material available. My bill, if enacted into law, offers the Federal Government the greatest possible opportunity to make practical use of information gathered at a tremendous price in war times.

"The problem is a national problem and an urban one due to the rapid expansion of the urban population in which the whole United States, which is increasing at a rate three times greater than that of the rural population, 46 per cent of the whole population being urban in 1910 and there being but little doubt that the 1920 census will show more than 50 per cent of our population living in cities. Before the war, due to this rapid expansion, there was a shortage of homes which was greatly augmented by the sudden cessation of building during the war.

Deficit of Home Building.

"The normal peace time expenditure in the United States for workmen's houses has been estimated at $1,000,000,000 a year. In 1917 the expenditures for this purpose were only 10 per cent of this amount. This deficit is further being rapidly increased at present by the very high cost of labor and material as well as the difficulty of obtaining mortgage loans. It was estimated some time ago that there was a shortage of more than one million homes in the United States. Every community is seeking the best possible means to relieve a situation more acute today than ever. The National Government has distributed land to homesteaders in the rural districts and has established Federal Land Banks for the financing of the farmer. Many departments of the Government have Bureaus which study and publish information regarding a multiplicity of subjects much less important than the subject of housing and living conditions.

"The United States is thus far practically the only country engaged in the war which has not taken definite steps to relieve the vital housing problem and to study living conditions in urban communities.

"There is no reason why there should be further delay and every reason why my bill should be acted upon at the earliest possible moment."

THE ENGINEERING SECTION OF THE NATIONAL SAFETY COUNCIL.

In accordance with the action of the annual meeting of the National Safety Council on October 1st, the Executive Committee of the Council has approved the organization of an engineering section along the lines described below.

This plan does not contemplate a "Safety Engineering" section, nor does it attempt to define the term "Safety Engineer," which has been commonly applied to all men in responsible charge of safety work. The purpose of the new section is to bring together in closer contact the civil, mechanical, electrical, mining and chemical engineers in the council's membership, so that they may contribute more effectively towards the solution of the purely engineering problems so frequently encountered in safety work—just as the physicians among the council's membership are united in the health section.

Membership qualifications are parallel to those of the great national engineering societies, except that, for the present, associate membership (without the right to vote or hold office in the section) is open to engineers having three years' experience; this will gradually be increased to six years, which is the requirement of those engineering societies having the highest standard of membership.

The details of the plan approved by the executive committee, on the recommendation of a special committee of engineers, are as follows:

Membership.

The membership of the engineering section shall be composed of individuals who are members of the National Safety Council or who are employed by or affiliated with members of the council and who, in addition, have the following qualifications: Either (1) they must be members of the American Society of Civil Engineers, the American Society of Mechanical Engineers, the American Institute of Electrical Engineers, the American Institute of Mining and Metallurgical Engineers, the American Society of Chemical Engineers, or Canadian or European societies of equal standing; or (2) they shall have had at least ten years' experience in engineering work and shall have been for at least five years in responsible charge of such work—a degree from a recognized college of engineering being accepted as equivalent to two years' experience. Persons who are members of the council, or employed by or affiliated with members of the council, may become associate members of the engineering section if they are either (1) associated members of the American Society of Civil Engineers or

the other engineering societies above mentioned, or (2) if they have had three years of experience in engineering work. a college degree being given the same credit as above. Such associate members shall have all the rights and privileges of members except the right to vote or hold office in the section.

Organization.

The section shall have a chairman, a vice-chairman and a secretary, the secretary being a member of the engineering staff of the National Safety Council; and an executive committee of not more than twenty-five, including the officers, and including at least one member representing each of the industrial sections of the council. Among the sub-committees of the executive committee there shall be a committee on membership, with five members, which shall pass upon all applications for membership in the section. D. S. Beyer, J. R. Brownell, A. P. Costigane, L. A. DeBlois, G. T. Fonda, H. W. Forster, E. B. Morgan, L. R. Palmer, C. E. Pettibone, C. C. Rausch, H. A. Schultz, F. P. Sinn, T. S. Stanion, C. M. Talbert, B. F. Tillson, C. P. Colman, E. B. Tolsted and J. S. Williams are constituted a temporary executive committee to perfect the organization of the section.

Functions.

The functions of the engineering section shall be:

1.—To help to meet the technical demands of the various industrial sections and furnish them technical information as desired.

2.—To perform technical services for the council, on request of the executive committee of the council, such as the development of standards or participation therein; the solution, by inquiry or through research, of special engineering problems arising in safety work; and helpful co-operation with the American Engineering Standards Committee, the national engineering societies, the Bureau of Standards, the Casualty Department of Underwriters' Laboratories, etc.

3.—To conduct one or more meetings as a part of the Annual Safety Congress, at which engineering problems shall be discussed.

4.—To conduct, if considered desirable, one or more additional sectional meetings during the year, or in different localities.

5.—To carry on such other activities as will, in the opinion of the Executive Committee of the National Safety Council, promote the safety movement and the best interests of the council.

U. S. CORN CROP THIRD LARGEST EVER SECURED.

2,910,250,000 Bushels; Exceeds Last Year's by 327,000,000 Bushels.

A corn crop of 2,910,000,000 bushels is the preliminary report of the government department of agriculture for November. It is the highest return of the year and based on huskings. The yield is the third largest crop on record and is of unusually fine quality, showing 10,000,000 bushels more than suggested a month ago, and 327,000,000 bushels in excess of last year, with an increase of 161,000,000 bushels above the five year average.

Yields of wheat, oats, rye and barley were not reported this month, the preliminary returns having been made in October. They aggregate 2,421,000,000 bushels or 381,000,000 bushels short of last year, the wheat crop being 1,000,000 bushels more and oats 318,000,000 bushels less than a year ago. Taking the five grains, including the corn, the aggregate returns were 5,332,000,000 bushels, an increase of 10,000,000 bushels for the month, but a decrease of 53,000,000 bushels from last year, and 236,000,000 bushels short of the record of 1915, the big reduction being in corn and oats.

Illinois Corn Crop Short.

In the seven surplus states where the commercial corn crop is raised there is 1,436,741,000 bushels or 5,959,000 bushels less than last month, and 106,444,000 bushels in excess of last year. Iowa leads all states with 409,000,000 bushels and with all large corn states has a yield in excess of last year, while Illinois, the second largest, with 296,000,000 bushels is 55,000,000 bushels short of last year. Texas exceeds all its records with 208,000,000 bushels compared with 69,000,000, and an average of 131,990,000 bushels.

The flaxseed crop is a short one and below domestic requirements, being 9,450,000 bushels, or 5,207,000 bushels below last year's.

Higher Potato Prices Loom.

A shortage of 48,000,000 bushels in the potato crop is an important factor and means high prices. The crop is 352,000,000 bushels while the average for the country is 366,000,000 bushels. This is in a measure made up by a sweet potato crop of 103,000,000 bushels, or 3,700,000 bushels in excess of previous figures, and 34,000,000 bushels above the average.

MAC ENNICAL, EXPERT ENGINEER.

(Continued from Page 320.)

"Just follow patiently," Mac Ennical continued. "Yes," was my comment, "and then what?" I asked. "The direct radiation then requires that the boiler furnish 75,000 B. t. u. an hour. Of course, this must come from the coal burned in the boiler. Then as each pound will give up 8,400 B. t. u. it will be necessary to thoroughly consume 9 lb. in an hour. Then for the heating season of 3,300 hours the theoretical coal requirement is 29,700 lbs. Actually, however, according to my figures and the weather conditions pictured in the diagram, only 44 per cent of this is required. This mean that for 250 square feet direct steam radiation 6 to 7 tons of coal will have to be used during the winter."

Mac Rushes for the Five-Fifteen.

Just then a nearby factory whistle blew the five o'clock blast. Up started the expert, grabbed his coat and got ready to leave in a hurry.

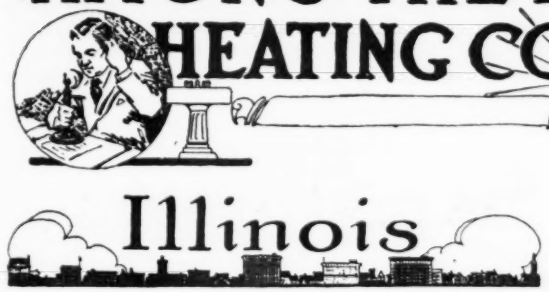
"I just have time enough to make the five-fifteen for home," he explained. "This has been a pleasant afternoon for me, because I like to help a chap who is earnestly looking for help." Then he made for the door, adding, "Maybe we'll talk this over some more another day."

World's Largest Concrete Building.

The Chicago mail order firm of Sears, Roebuck & Co. has just awarded contracts for what will be the largest reinforced concrete building in the world, excepting only those erected by the Government during the war. It will stand on a forty-acre tract, fronting on Roosevelt Boulevard in Philadelphia, and will cover a ground space of 780 by 440 feet. The plant will have a total floor space of 1,550,000 square feet and will represent an investment of $7,500,000. The designs and plans of the building were approved by the Philadelphia art jury which has jurisdiction over all buildings on the new parkway which is being cut across the city of Philadelphia.

The Black Masonry & Construction Co., of St. Louis, has received the contract for the construction of the 15-story Scandinavian-American Bank Building in Tacoma.

AMONG THE PLUMBING AND HEATING CONTRACTORS



Illinois

Chicago and Vicinity.

P. K. Clayton, 1949 North Western Avenue, has been awarded the contract for the plumbing and heating installations in the one-story and basement building to be erected at 2416 Homer Street. Architect H. Gaul prepared the plans.

M. Cohen, 1946 West Division Street, will install modern plumbing in the three-story and basement apartment building to be erected at 1210-18 North Kedzie Avenue. The structure will cost in the neighborhood of $185,000.

William P. Arnold, 2345 West Twelfth Street, has the contract for the installation of modern plumbing in the $30,000 church to be erected at Gladys and Lotus Avenues. Architect Harry Stevens, 4231 West Monroe Street, prepared the plans.

A. M. Strander, 3818 South Kedzie Avenue, has been awarded the plumbing contract for the two two-story and basement flat buildings to be erected at 2543-45 West 39th Place. The buildings will cost in the neighborhood of $8,000 each.

C. W. Johnson, 644 West Washington Street, has secured the contract for the heating installation in the $100,000 two-story parish house to be erected on Ridge Avenue, Evanston. Tallmadge & Watson, 189 West Madison Street, are the architects.

Architect George C. Nimmons, 122 South Michigan Avenue, is drawing the plans for a five-story brick warehouse, to be erected at 400-26 Fillmore Street. The building will cost in the neighborhood of $500,000.

Architect J. H. Bristle is preparing the plans for a $170,000 three-story brick service station, to be erected by H. P. Branstette at 2550-56 South Wabash Avenue.

Architects Wallace & Kellogg are drawing the plans for a three-story brick apartment building, to be erected by Searle S. Barnett at 425-27 East Sixtieth Street. The building will cost about $120,000.

Architect L. M. Mitchell, 19 South La Salle Street, is preparing plans for a three-story brick apartment building that is being erected by Edwin Carson at 5037-39 Dorchester Avenue. The building will cost in the neighborhood of $100,000.

Architect P. Gerhardt, 64 West Randolph Street, is drawing plans for a steel and concrete addition to be erected by the Illinois Publishing Co. at 316 West Madison Street. This structure will cost in the neighborhood of $100,000.

Architect Z. E. Smith, 5501 Prairie Avenue, is drawing the plans for a three-story brick apartment building to be, erected by J. L. & L. F. Harris at 10900-06 Vernon Avenue. This building will cost about $85,000.

Architect A. V. Capraro is preparing plans for a $65,000 two-story factory to be erected by Broccolo Bros., at 1238-44 West Harrison Street.

Architect J. Burns, 64 West Randolph Street, is making plans for the erection of a two and three-story warehouse to be erected by T. W. Keelin, at 4550-52 Lexington Street. The building will cost in the neighborhood of $52,000.

Architect J. J. Kocher, 810 West 79th Street, is preparing plans for the erection of a $50,000 two-flat brick apartment building to be erected at 6401-03 South Western Avenue by James McInerny.

Architects Pond & Pond, 64 East Van Buren Street, are preparing plans for a two-story brick church at 4852-56 South St. Louis Avenue. The church will cost in the neighborhood of $50,000.

Architect J. J. Kocher, 810 West 79th Street, is making plans for a brick residence at 7701-19-29 South Park Avenue. The building is being erected by Harold Nelson and is estimated to cost about $48,000.

Architect A. L. Himelblau, 179 West Washington Street, is drawing plans for a three-story apartment building, at 829-39 Sunnyside Avenue.

P. F. Olsen, 127 North Dearborn Street, is drawing plans for the three-story brick apartment building which will be erected at 1338-43 Argyle Street, at an estimated cost of $300,000.

Other Cities in the State.

Master plumbers of Springfield and vicinity have taken preliminary steps toward the organization of a district branch of the Illinois Master Plumbers' Association. A meeting was held November 6th at the St. Nicholas Hotel, where a large number of master plumbers discussed the move with representatives of the association. President Brownell, of Champaign, was the principal speaker. Frank U. Patterson, of Springfield, was appointed temporary chairman. A meeting for permanent organization was called for November 20th.

Adams Heating & Plumbing Co., of Elgin, has secured the contract for heating and plumbing installations in the $14,000 store and apartment building to be erected at Dundee and Lincoln Street, Elgin.

Indiana

Indianapolis and Vicinity.

For the sixth straight month of 1919, the amount of new building in Indianapolis has exceeded the $1,000,000 mark, according to figures just compiled by C. J. Hays, city building commissioner, for the month of October. Last month's totals alone will make 1919 the record year, so far as new building is concerned, in the history of the city. Mr. Hays is now going back over the old reports to ascertain what was the next highest year. The fact that new buildings starting during October shows total valuations making the month rank third during the present year is significant to builders and plumbing and heating contractors of the city, and it also gives some indication of what may be expected in the building line next

year. Only July and August rank higher than October, so far as total valuations are concerned. Although the number of permits issued in September were slightly greater than in October, the total valuation of new buildings for the last month was greater by $400,000.

Seven hundred and eleven permits were issued during the month of October, calling for buildings valued at $1,576,890, while in September, 739 permits were issued, calling for a total building valuation of $1,179,460. The permits last month call for a building valuation about eight times greater than for the same period of 1918. The report for the month shows that Indianapolis is devoting more attention to buildings of the better class, the brick and fireproof structures showing a decided gain over the month of September.

Freyn Bros., of 31 West Michigan Street, Indianapolis, have been awarded the contract for the installation of plumbing and heating systems in the new three-story apartment building that is to be erected at Colorado Street and Euclid Avenue for the Gladstone Realty Co. The firm also has the contract for the installation of plumbing and heating systems in the new automobile factory that is being erected on North Capitol Avenue for Harry C. Stutz.

The plumbing and heating contracts on the new residence and garage, which are to be erected on Pleasant Run Boulevard, for Paul Klieber, of Indianapolis, have been awarded to Michael Clarke, 629 North Rural Street.

Fort Wayne and Vicinity.

Despite the near advent of winter, building activities in Fort Wayne are still on the increase. Records at the city hall indicate that the present year is not only going to be a lucrative one for persons connected with the building trades but that it is also going to bring marked relief in the city's housing situation. Including $425,000 in building operations for the month of October, building valuations so far this year total $1,839,157, as compared with $594,539 for the first ten months of 1918, an increase of $1,244,618. From January 1 to October 31, 1918, a total of 299 building permits were issued. This year 680 building permits have been taken out, and the records show that the majority of these were for the erection of residences or dwellings.

Other Cities in the State.

The Orth Plumbing Co., of 509 Columbia Avenue, Lafayette, has been awarded the contract for the installation of the plumbing and heating systems in the new $25,000 residence that is to be erected soon for Lee Glatz.

The plumbing and heating contracts on the new $100,000 grade school, that is to be erected at Tipton, have been awarded to Compton & Son, of Tipton.

The Lane-Pyke-Werkhoff Co., East Tenth Street, Lafayette, have secured the plumbing and heating contracts on the new $15,000 residence that is to be erected on Central Street for Dr. H. N. Swezey.

The firm of Prox & Burgett, of 123 North Eighth Street, Terre Haute, has been awarded the contract for the installation of plumbing and heating systems in the new $50,000 building that is to be erected near the city for the Terre Haute Country Club.

Victor C. Knauth, of Busseron Street, Vincennes, has secured the plumbing and heating contract on the new $95,000 creamery that is to be erected for the Vincennes Milk Co. Mr. Knauth also has the contract to install the plumbing and heating systems in the new addition to the Soldiers and Sailors Memorial School in that city.

The Northern Heating Co., 120 North Michigan Street, South Bend, has completed the installation of plumbing and heating systems in Busse Baking Co.'s new plant.

A. B. Wetherell, of Muncie, has secured plumbing and heating contracts on six new residences that are to be erected for the Skillen-Moore Glass Co. in that city.

Buck & Boyd, of Vincennes, have been awarded the contract for the installation of plumbing and heating systems in a new hotel building that is to be erected at Lawrenceville, Ill.

Cincinnati and Vicinity.

The building boom which is in progress in Cincinnati is reflected in the monthly report of Building Commissioner George E. Rendigs. It shows that during the month of October, 1,032 permits were issued for improvements estimated to cost $946,670. This is almost three times as large a record as for October of last year. The report shows also that for the 10 month period just ended there has been twice as much building authorized as for the corresponding period last year, though below the 1917 record.

Sayers & Scovill Co. will build an automobile assembling plant and will receive bids in two weeks through Architects Tietig & Lee. It is estimated the plant will cost in the neighborhood of $150,000. The building is to be tripled within the next three years when the entire plant will be removed to Winton Place.

The Multi-Color Type Co., of Middletown, will locate in Hartwell, a suburb of this city, where it will erect a plant to cost in the neighborhood of $300,000. Ground has just been acquired.

The Murdock Plumbing Co. has been awarded the plumbing contract and T. J. Connor the heating contract on the new plant to be erected by the Teasdale Dry Cleaning Co.

Architects Walker & Weeks, of Cincinnati, are drawing plans for a $500,000 bank and office building to be erected by the Steubenville Bank and Trust Co., at 4th and Main Streets, Steubenville.

Cleveland and Vicinity.

G. Prestien, 2158 West 38th Street, has been awarded the contract for the installation of plumbing in the two-story residence being erected for D. Madak at 4219-23 Leading Avenue. The West End Hardware Co. has the contract for the heating.

The Grant Lees Gear Co. is erecting a factory at East 69th Street and Carnegie Avenue, to cost in the neighborhood of $200,000.

The Gustin Company, of Euclid Avenue, Cleveland, is drawing the plans for the erection of a four-story factory to cost in the neighborhood of $250,000. The building will be erected on Spring Grove Avenue, adjoining the present plant.

A two-story garage and automobile display room will be erected on the Southwest corner of Prospect Avenue and East 40th Street by the Overland Larick Co.

Architects Walker & Weeks are drawing plans for the gymnasium to be built by the Y. W. C. A. at 18th Street and Prospect Avenue. The building is estimated at a cost of $140,000.

H. P. McGrath, 511 East 3rd Street, Dayton, has secured the contract for the installation of plumbing and heating systems in the $30,000 factory, which is being erected by the Standard Register Co. at Albany Avenue and Big 4 R. R.

The Columbus Heating & Ventilating Co., of Columbus, has been awarded the contract for the heating installation in the two-story school building, which is to be erected in Lost Creek, O. John Arpp, Middletown, has the contract for the plumbing.

The County Commissioners of Hamilton County have decided to go ahead with the addition to the woman's building at the Longview Hospital for the Insane. The proposed building was stopped by the war. The building will cost more than $500,000. The Commissioners will consult with the architects regarding certain changes to keep as close to the original estimate as possible.

California

San Francisco and Vicinity.

Among the many buildings planned for erection in the near future is a class C auto sales building to go up on Post Street, near Van Ness Avenue. Plans were drawn by Architect Headman.

Architect J. C. Hladik is now taking figures for a $45,000 three-story apartment house which is to be erected on Pine Street, near Stockton.

The contract for all construction work on a two-story store and loft building to be located in California Street, near Front, has been awarded to Richard J. Forbes. Other contracts recently awarded in San Francisco include remodeling work in a class C building at 336 Second Street, which is to be occupied by the U. S. Rubber Co. The plans call for an expenditure of $50,000.

At an estimated cost of $45,000 a considerable amount of interior alteration work, including new fixtures, will be done in the building of the Anglo California Trust Co. at Market and Sansome Streets.

A building permit was recently granted for the erection of a $35,000 three-story frame apartment building at the northwest corner of Broderick Street and Golden Gate Avenue.

The plumbing work in a one-story concrete building now going up in Post Street, near Franklin, has been awarded to Frederick W. Snook.

Other Cities in the State.

Totten & Trewhitt, of Stockton, have been awarded the contract for the erection of a three-story brick hotel and store building at the corner of El Dorado and Lafayette Streets, at a cost of $45,000.

A $20,000 auto sales and garage building is to be built in Hayward at A and Main Streets, according to plans and specifications drawn by Architect Sydney B. Newsom, San Francisco.

The construction of 79 new residences in Lodi during the past season has failed to supply the housing need, and plans are now under way for the immediate building of adequate accommodations for those who are forced to take crowded quarters at the local hotel. It has been estimated that an increase of 40 per cent in the population of the Lodi district has been made since 1915.

Preliminary plans for the $75,000 addition to the east wing of the high school in Modesto have been accepted by the Board, and bids will be called upon the completion of the working plans. The new addition will contain five class rooms and a cafeteria.

Architect W. H. Weeks, of San Francisco, is now taking figures for a one-story bank to be erected at Knights Landing. Mr. Weeks is also working on plans for a high school building to be erected at Bishop, to cost in the neighborhood of $150,000.

The property at the southeast corner of Eleventh and J Streets, Sacramento, which recently changed hands, is to be improved with an eight-story reinforced concrete building in the near future.

Plans are now under consideration for the erection of a $50,000 hotel at Willows, to be built for the Hotel Men's Association.

Tentative plans have been made for the erection of a new church in Berkeley by the Epworth Methodist Church, to cost about $150,000. In addition to the church building an educational building will also be erected.

An apartment house, to cost in the neighborhood of $50,000, is to be erected at the intersection of Divisadero, College and Voorman Streets, at Fresno.

Missouri

St. Louis and Vicinity.

Bills for supplementary appropriation for the department of sewers, amounting to $65,000, were introduced at the last meeting of the Board of Aldermen. Of this amount $40,000 is to be used for maintenance of sewers and $10,000 for departmental supplies. The greatest part of the proposed appropriation, which is almost certain of being realized, will go for special work, and probably will be broken up into small contracts. None will be used for new work.

Miss Blanche Geary, one of the best known "house builders" in the country, in an address in St. Louis, said that the convenience and taste of women should be a paramount consideration of women. She is an ardent advocate of distinctive plumbing fixtures and believes that a woman's hand in building a home is seen more in the kitchen and bathroom than any place else. A woman knows more than the architect what she needs to solve these two problems. It is to be regretted that so much sameness is found in bathroom appointments, and that the same mistakes are made over and over again in placing kitchen fixtures. Miss Geary's advice to women is to wait until the architect has presented his blueprints and then change them to suit themselves. She declared that architects know nothing about a woman's problems in a house. Miss Geary was in St. Louis to attend the economic conference of sixteen states. It is said that there is not a state in the Union and scarcely a city that does not contain a house which she has had a hand in planning. She has been at the head of the housing department of the Y. M. C. A. for ten years, and maintains headquarters in New York. She has studied architecture for 25 years. She can boss a gang of workmen, and has done so more than once. Miss Geary's early training was under no less expert hand than Octavia Hill, of London, who spent many years and thousands of dollars in bettering London tenement conditions.

A building permit has been issued for the construction of the seven-story plant for the United Drug Co. on King's Highway, between San Francisco and Margaretta Avenues, in St. Louis' new industrial belt. The building will cost $1,500,000, and is the first of five, which, when completed, will make St. Louis a great drug market.

Kansas City.

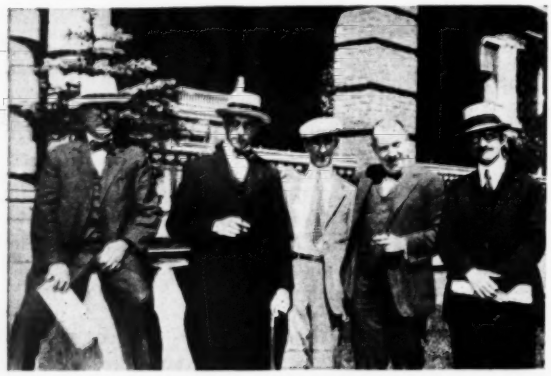
The Cunningham Plumbing & Heating Co., of 408 West Twelfth Street, has secured the contract for the installation of plumbing and heating systems in J. S. Lillis' residence. This contract amounts to $13,000. This company will also install plumbing systems in R. L. Sutton's residence and in the Cleveland Metal Products factory in Kansas City.

New Jersey

J. C. Mackey, of Newton, has been awarded the contract for the installation of modern plumbing systems in the eighteen new residences to be built by Edward A. Lee.

W. G. Royer, of Newton, has secured a number of fine contracts, among them being the installation of plumbing and heating systems in the dormitories of the Boys' Home at Jamesburg; in the new addition to the Trenton Times Building; in four residences being erected for William Hicks in Westfield Avenue; in twenty-six residences for J. H. Marsh, and in the house to be erected in Bordentown for the Colored School.

George Hourkette, Newton, has secured contracts for the installation of plumbing and heating systems in twenty-nine houses for the Greenwood Reality Co.; ten for Harry Siegle; six for Elmer Stout, and six for Isaac Levey.



John T. Seiler, of John Maddock & Sons Co.; Arthur J. Burgen, of the Resolute Pottery Co.; Wm. Devine, Jr., and H. G. Miller, both of the Thos. Maddock's Sons Co.; and Fred G. Hoffman, of the Elite Pottery Co.; all of Trenton, N. J.—From "Domestic Engineering" Photo.

Pennsylvania

Sub-Contractors Hold Meeting in Philadelphia.

A meeting of sub-contractors and material men in Philadelphia was held at the Hotel Adelphia, on Tuesday, November 11th. It was called for the purpose of considering the advisability of uniting employers in all building trades in the city under similar methods of procedure as obtain in other large cities. The objects are to foster the welfare, reform abuses, and in all lawful ways promote a greater degree of uniformity and certainty in the customs and usages of the building trades as to credits, protection from unfair contracts, and fair, just treatment in all business relations.

The announcement sent out by Edwin L. Seabrook, chairman of the Organization Committee, 261 South 4th Street, Philadelphia, included the names of the following members in the plumbing and heating trade:

Plumbing Trade: William M. Anderson, Boon & Sample, C. J. Doyle, D. F. Durkin, Jr., S. Faith & Co., P. Gormly Co., Gray & Dormer, E. F. Roberts, Walters, Purks & Mellon, Wayne Plumbing & Heating Co.

Heating and Piping Trade. William M. Anderson, Baker, Smith & Co., Boon & Sample, Bowers Bros. Co., C. J. Doyle, D. F. Durkin, Jr., S. Faith & Co., P. Gormly Co., Gray & Dormer, J. Howard Hutchison, S. A. Jellett Co., Johnson Service Co., Kriebel & Co., Philadelphia Steam Heating Co., John P. Smith, Thompson Bros., Walters, Purks & Mellon, and Wayne Plumbing & Heating Co.

Pittsburgh and Vicinity.

Applications have been made for building permits for a 12-room, tile-brick dwelling and a one-story brick garage on Darlington Road, near Shady Avenue, to cost $14,000.

The banquet committee of the Builders' Association reports strong enthusiasm in the organization's annual banquet, which will take place on December 11th, at the Fort Pitt Hotel. Edgar A. Guest, the writer and lecturer, is scheduled to be one of the speakers.

The S. L. Smith Co. has the contract for the erection of a gasoline filling station in Bellevue for the Transcontinental Oil Co.

Plans are being drawn for a new public school building at Brentwood, to cost $80,000. C. C. Compton, Donora, is the architect. The same architect also has plans in preparation for a new commercial garage at Donora to cost $40,000, for the Ridgely Motor Corporation; also for a new country club at Donora, for the Monongahela Valley Country Club.

The George H. Soffel Co., and the Weldon & Kelly Co. are among the bidders on plumbing work in the new addition to the Homestead High School building.

The McGinnis-Smith Co. has the contract for the installation of heating in the H. E. Wainwright residence, Beechwood Boulevard and Fennimore Street; also the heating job in the Reid Kennedy residence on Beacon Street.

New York

Albany and Vicinity.

J. Mathew has opened a plumbing and heating establishment at 445 Hamilton Street, Albany, and has secured the contract for the installation of modern plumbing in Gleason's Garage.

L. M. Colyer & Sons, Albany, have been awarded the contract for the plumbing and heating in M. Tackerow's two new houses. They recently completed the plumbing in the residence of Doctor Druce.

Foster & Son, 940 Main Street, Peekshill, have secured the contracts for the plumbing in the Standard Textile Co.'s new warehouse and in three houses in Phillips Manor, near Tarrytown.

Robt. Lemmey & Sons, Ossining, have secured the contract for the installation of nine bathrooms and the heating plant for N. L. Miller. They will also install three bathrooms in the home of P. E. Strom.

New Rochelle.

Mullins Bros., of New Rochelle, have secured contracts for the installation of plumbing and heating systems in twelve new buildings.

Farrell Bros., of New Rochelle, are in for a very busy season, having received quite a number of contracts for remodeling plumbing systems.

J. Lambert, of New Rochelle, has been awarded contracts for fifteen heating and plumbing installations, also a goodly amount of remodeling work.

Charles H. Lavis, of New Rochelle, has been awarded contracts for the plumbing and heating installations in the new residences of J. Bendall and I. Lee. These, together with a number of heating jobs, promise a very busy season.

Cedarhurst.

Charles Hetrick & Son, of Cedarhurst, have received a number of contracts for remodeling plumbing systems. His Son, Walter C. Hetrick, has just returned from France and is now a partner in the business.

Julius S. Wiston, of Cedarhurst, has a very busy season ahead of him, having been awarded several good contracts for plumbing and heating installations, together with plenty of work in the alteration line.

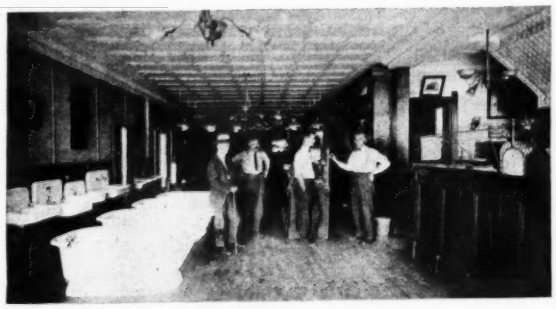
C. Willis Woodford, of Cedarhurst, has secured the contracts for the plumbing and heating in the two new residences in that city.

Other Cities in the State.

Coffey Bros. have just opened a plumbing establishment at Dobbs Ferry. They are installing the drainage system at the new Hannon Shoe Factory at Dobbs Ferry. They have also secured the contract for remodeling the plumbing in the Sisters' School.

Harper's Plumbing Shop, Yonkers, has secured the contract for remodeling the plumbing in the National Sugar Refining Co.'s plant.

William & Cullinan, of Yonkers, have secured the contract for the installation of hot water heating in the garage of R. B. Hibbert in Yonkers. They have also secured the contract for the installation of modern heating in Public School No. 15.



The Peterson Plumbing & Heating Co.'s Office and Showroom in Utica, N. Y.

William Malcolm, of 277 Broadway, Yonkers, has secured the contract for the plumbing and heating in the H. T. Dodge residence and the plumbing in the residence of A. W. Cross.

Thomas Haldane, 36 Yonkers Avenue, Yonkers has been awarded the contracts for plumbing in forty-two new houses being erected in Pelham, Pelham Woods and Yonkers, among them being a contract for the installation of plumbing and heating in the A. Davidson apartment house.

Willam Brown of 71 Broadway, Yonkers, has secured the contracts for the installation of the plumbing in Hannon's Shoe Factory at Dobbs Ferry. He is also installing steam heating and plumbing systems in the Palmine Butter Co.'s plant at Yonkers, the plumbing in twenty private residences and in Public Schools Nos. 16 and 18.

F. G. Sanford & Co., 302 Woodworth Avenue, Yonkers, have secured contracts for the installation of heating and ventilating systems in Public Schools Nos. 5 and 9; and in three apartment buildings for Van Ness Bros.

John M. Engeldrum, of 477 Fulton Street, Jamaica, has secured a number of plumbing and heating contracts.

Place & Allen, of Hempstead, have secured the contract for the installation of five bathrooms in A. Brisbane's residence.

Oliver E. V. Reynolds, of Freeport, will install modern plumbing in a Garden City residence. He will also install vapor vacuum heating systems in three residences.

T. J. Shanahan, of Rockville Center, reports a very prosperous season.

A. J. Flanagan, of Rockville Center, has secured quite a number of contracts for plumbing and heating installations in residences.

Maher Bros., of Astoria, will install plumbing and heating systems in Hefner's new residences on Second Street.

Schusky & Casper have opened a plumbing and heating establishment in Long Island City and already have a number of plumbing and heating contracts on their books.

W. Van Wickler, of Freeport, will install plumbing and heating systems in twelve new residences.

George W. Loesch, a former Army man, has opened a plumbing business in Rockville Center. He has secured the contract for remodeling the plumbing in the Rockville Center Sanitarium.

Weber & Hamilton, of Astoria, have been awarded several large contracts, among them being the contract for installation of plumbing in the Famous Players' new $2,000,000 Studio Building.

Hugh C. Emert, of Lynbrook, having just completed the plumbing and heating installation in the Post Office, is now installing a heating plant in the Lynbrook Department Store.

Massachusetts

Boston and Vicinity.

James S. Cassedy, of Cambridge, past-president of the National Association of Master Plumbers, has installed, and is now experimenting with a bookkeeping system that practically eliminates all guesswork, in the conducting of his large and successful business. An expert cost- accountant and three clerks are required in the execution of the work. With the persistent and untiring efforts of Mr. Cassedy, every phase of the business, from all angles, is so classified, that he has statistics of the largest to the most minute detail at his finger-tips at a moment's notice. Some surprising results have been discovered by him, due to the intenseness of his application and study of the system, that ordinarily escaped the scrutiny of many successful merchant plumbers. Mr. Cassedy states that on the completion of his work along these lines, he will present his method to the Master Plumbers' Association, so that its members may also enjoy the advantages that are to be derived from such an important part of the business. Mr. Cassedy is at the present time employing seventy-five men in addition to his office force and is executing some large contracts in New England.

Anderson Plumbing & Heating Co., of 95 Crescent Street, Brockton, has been awarded the contracts for the installation of heating systems in the Conrad Shoe Factory, Abington, and in Walker-Webbing Co.'s plant, Brockton, and for plumbing and heating in the C. S. Marshall addition, Brockton; the Machinery Last Factory, Abington; the Swayne Factory, Abington, and in Lehan's Garage, at Stoughton.

John J. Callahan, after being connected in various capacities with the James T. Corcoran Plumbing & Heating Co. for twenty years, has recently started in business on

Make NOVEMBER One of Your Best Months By Selling

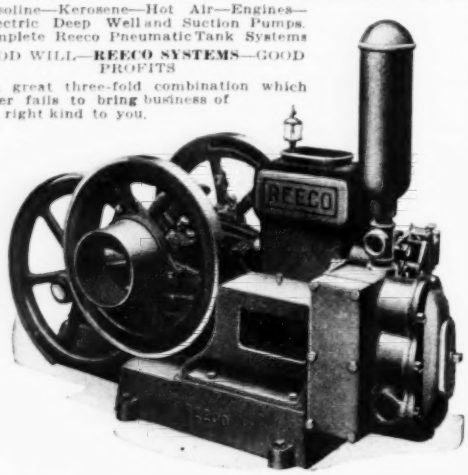
REECO WATER SUPPLY OUTFITS

No slack season necessary—a good all-year business—TRY IT.

Gasoline—Kerosene—Hot Air—Engines—Electric Deep Well and Suction Pumps. Complete Reeco Pneumatic Tank Systems

GOOD WILL—**REECO SYSTEMS**—GOOD PROFITS

A great three-fold combination which never fails to bring business of the right kind to you.



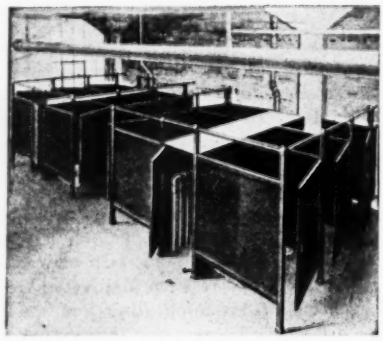
Reeco Gasoline Surface Pumper.
Send for Bulletin B-1

Rider-Ericsson Engine Co.

Walden, N. Y.

DISTRICT OFFICES:

20 Murray St., New York — 40 N. 7th St., Philadelphia
Fidelity Mutual Bldg., Wilson, N. C. — 44 Drayton St., Savannah, Ga.
116 S. 8th St., Minneapolis — 203 N. Liberty St., Baltimore
9th and Cary Sts., Richmond, Va. — 1536 Franklin St., Tampa, Fla.
564 West Randolph St., Chicago



Sanymetal
TOILET PARTITIONS
TRADE MARK U. S. REG.

Made of Stretcher Leveled Armco Iron. Finished in Baked Enamel. (No painting on job.) Each partition complete when shipped.

Doors fitted with Gravity Roller Hinges. (Malleable Iron.)

A bigger, better profit for you.

Why not make Sanymetal a part of your contract?

The R. F. Carpenter Mfg. Co.
978-984 E. 64th St. Cleveland, Ohio

his own account at 198 Main Street, Brockton, where he has a fine show room with modern fixtures on display. He reports having secured the heating contracts on two residences for Daniel Daidy on Winthrop Street, and the plumbing in the residences of Fred Packard, Keith Avenue, and Edward Billington, West Bridgeway.

Fred J. Murphy, 10 Crescent Street, Brockton, is installing the plumbing and heating in twenty residences in the city of Brockton and vicinity.

L. S. Frost, 2445 Massachusetts Avenue, Cambridge, is installing heating and plumbing systems in two residences at 40 Jason Street, and Elmore and Arlington Streets, a hot water heating system in Henry Clark's residence on Beach Street, a steam heating system in George Lawrence's garage, and hot water heating in the residence of Mrs. Earl Bates, South Lincoln.

James E. Burke, 16 Chardon Street, Boston, has been awarded the contracts for the plumbing and heating installations in the Appollo Co.'s plant and in more than a dozen residences in the city.

John T. Phalen, 17 Brattle, Street, Cambridge, has secured the contracts for the installation of vapor systems and for remodeling of plumbing systems in two residences for R. C. Cox, at 140 and 182 Brattle Street, Cambridge, for the plumbing in the residence of Mrs. Pierson, Bradford Street, Concord Junction; and he also has a considerable amount of remodeling work on his books.

Wm. Haley, of 1896 Massachusetts Avenue, Cambridge, is busy these days with several fine contracts for plumbing and heating installations and a large number of remodeling jobs on his books.

L. G. Walden, Cambridge, has secured the contract for the installation of a heating system in the factory of the Waterproof Paint Co., Watertown, at $4,000. He will also install plumbing and heating systems in the U. S. Column Co.'s plant at Cambridge; the Warner residence on Moultree Street in Dorchester; and in four apartment buildings for the Washington Association.

H. L. Rose, 244 Prospect Avenue, Cambridge, is enjoying an exceptionally busy season remodeling plumbing and heating systems.

Ernest W. Clark, formerly at 1440 Massachusetts Avenue, Cambridge, is now located at 5 Brattle Square. He reports business good.

T. W. Haley & Son, of 27 Brattle Square, Cambridge, is installing the plumbing in several new residences.

Worcester and Vicinity.

John Gustafson & Co., of Worcester, have moved into their new building, at 22 Lincoln Street, where they have an attractive show room. Among their many contracts are the plumbing installation in the Boy's Industrial School at Shirley, Mass., and the plumbing in the new addition to the U. S. Envelope Hill Division; the plumbing in 40 cottages and the heating in 25 cottages.

I. B. Barrows & Co., 1088 Main Street, Worcester, have secured the contracts for the plumbing installations in the Spencer Wine Co.'s plant and in twelve cottages in Worcester.

Swenson & Lundstrom, 142 Green Street, Worcester, have been awarded a number of heating contracts, among them being installations in the Y. M. C. A. Building on Summer Street, and the Paul White Machine Co. at Whiteville. They have thirty-one men on their payroll.

Murphy & O'Connor, 37 Grafton Street, Worcester, have been awarded the plumbing contracts in ten new residences at Lake Park Heights for Mr. Haynes.

Daniel F. Loan, 32 Winter Street, Worcester, has recently secured a considerable amount of remodeling work in various factories and residences in the city.

John J. Hickey, 329 Grafton Street, Worcester, recently completed the plumbing installation in a $10,000 bungalow on Massasoit Road and has been awarded the plumbing contracts for two apartment houses on Burncourt Street.

Foley & Hackett, 84 Shrewsbury Street, Worcester, are installing the plumbing in six tenement houses.

The R. R. Plumbing Co., 41 Water Street, Worcester, has secured the contracts for plumbing installations in two new, three-family dwellings for Budis & Copland on Houghton Street, three new two-family dwellings on Dorchester Street, and a number of others in that city.

John M. Pierce, 7 Goulding Street, Worcester, is now acting in the capacity of councilman, in addition to operating his successful plumbing establishment. Among a number of contracts recently secured is the installation of plumbing in five three-family houses for Chris. Nelson.

Gilbert J. Patterson, 1 Kilby Street, Worcester, has secured several remodeling contracts and is installing steam heating plants in three residences of that city.

Alexander E. McDonald, 29 Hollywood Street, Worcester, is installing the plumbing in a three-family house on Florence Street and has considerable remodeling work on his books.

The estate of G. C. Winter, Southbridge, is installing modern plumbing in the H. Wales Linen Co.'s building on Main Street and in several other buildings in that city.

I. J. McManus, 128 Millbury Street, Worcester, has secured a large number of plumbing contracts. Among them are a mansion at Jefferson, and nine residences in Shrewsbury.

James Rogers, 11½ Providence Street, Worcester, has been awarded contracts for installing modern plumbing in fifteen houses.

George Tucker, 165 Commercial Street, Worcester, has secured the contracts for the plumbing installations in six new residences being erected for the Woolen Mills at Stoneham, Mass.

W. A. Burns, Worcester, is installing the plumbing in the new residences of J. Yatta and B. Ashe.

Wm. J. Callaghan, 16 Foster Street, Worcester, has the contract for plumbing and heating installations in several residences in the city and is exceptionally busy with remodeling work.

E. R. Varnum, North Brookfield, has secured the contracts for plumbing and heating installations in the residence of S. F. Mason at Westbrook; the plumbing in the Warren Steam Pump Co.'s plant, and in residences for George W. Earl, William Shuttleworth, in Warren, and M. B. Sering, in West Brookfield.

J. F. Kiley, 37 Pleasant Street, Worcester, is installing the plumbing in two new residences in the city and has considerable remodeling work on his books. Mr. Kiley maintains a very nice show room and office.

Other Cities in the State.

The North Side Heating Co., Westfield, is completing the installation of plumbing in a bungalow for Tony Parellina on Union Street, the residences of J. D. Doyle and John Snider on Park Street, Philip Chase, Planet Street; George Eldreth on Prochassi Street, and the heating and plumbing in the residence of Salvator Coscio on Elm Terrace.

Veale Bros., 152 Main Street, Chicopee Falls, are installing showers for employees in the Fish Building, Springfield, the heating in the K. C. Building, and the plumbing and heating in the residence of M. Gauthier, Oles Street; the Taylor residence on Corcoran Street; a two-family residence for J. La Rone, and the overhauling of the plumbing in Adolph Gosslin's residence.

THERMO SYPHON TRAP

For Vapor, Vacuum, Atmospheric and Modulation Systems

This trap is designed especially to handle the condensation from any type of one-pipe or two-pipe steam heating systems, there being either a vacuum or pressure in the system, and NOT TO EXCEED 20 LBS. PRESSURE ON BOILER.

Assures perfect circulation and noiseless operation. Costs less than a pump, does not involve repairs or electric current bills, saves expense of pitting boiler and eliminates receivers and air relief tanks. Overcomes faulty operation in old heating systems.

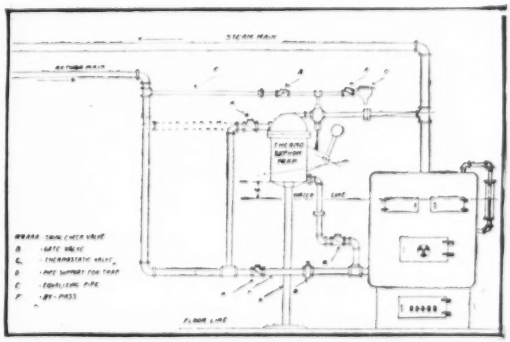
We build traps for every class of service. Let us help solve your condensation problems.

Write for Bulletin No. 16.

LYTTON MANUFACTURING CORPORATION

Trap Specialists

FRANKLIN, VA.



Application of Thermo Syphon Trap, showing proper method of piping for draining any heating system.

No. 32 Torch. List Price Each $16.00.

Ask for Discount.

Gasoline Does Not Cost Much

when used in a C. & L. Gasoline Torch or Fire Pot, because fuel is saved to a remarkable degree. The special construction of the generators and the high grade material used, secure the maximum degree of heat at a minimum expense for fuel. Use our No. 32 for indoor or outdoor work in cold and windy weather. It is guaranteed to give satisfaction. Jobbers supply at factory price. Send for catalog—it's free.

Clayton & Lambert Mfg. Co.
DETROIT, MICH. U. S. A.

CUT DOWN LABOR COSTS
and do a better job of pipe cutting with the
B & B THIN BLADE
Pipe Cutter Wheel

Cuts through pipe with little resistance and fewer turns of cutter than other makes.

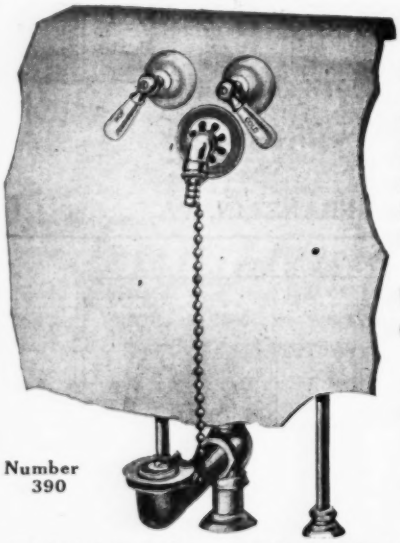
Does not spread metal apart—makes a clear, clean cut, reducing burr to the minimum.

Made of best tool steel, scientifically tempered.

Get a B & B Cutter Wheel from your jobber. Make any test you wish. Ask about our positive guarantee.

B & B TOOL & MACHINE WORKS
519 W. VAN BUREN ST. CHICAGO
Cutter Wheel Specialists

SANIBRASS
UNDER-THE-RIM BATH FIXTURES
PATENTED



Number 390

Number 15 For Built-in Bath Tubs are the largest selling fixtures on the market

Write for details.

Order Sample for Your Show Room

SANIBRASS CORPORATION
17-27 LIBERTY STREET BROOKLYN, N. Y.

The Donnelly Plumbing Co., Bridge Street, Chicopee Falls, have secured the contract for the installation of heating in the Smith Highland School and the Methodist parsonage. They are very busy with remodeling work in residences in the city.

The Brownell Co., Northampton, is installing ten bath rooms in the Infirmary Building, six baths in the residence of B. B. Hinkley, and four in the home of Anna B. Jenks.

E. J. McCarthy, Northampton, is installing the plumbing and heating in the McCarthy residence on Bridge Street and has many remodeling jobs on his books.

J. T. Holland Co., Crescent Street, Brockton, has received the contracts for heating installations in four-story addition to the Brockton Rand plant, in two new wings for the Emerson Shoe Co., the new plant of George Keith, the Acme Herb Co.'s building and in Nickerson & Sampson's garage.

J. A. Alland, Southbridge, will install plumbing and heating systems in the Memorial Building, steam heating systems in two stores for Ralph Robbins, heating in the National Steam Laundry, and plumbing in two single residences.

Fitts & Barker, of Natick, have been awarded the contracts for the installation of plumbing and heating in the New England Pressed Steel Building; also the plumbing in the Todd Co.'s plant on Summer Street, and in the residence of John W. Casey on Walnut Street.

The firm of Henry W. Hammer & Co., 749 Main Street, North Montello, has acquired the business of Ralph E. Durham. The firm has just secured ten contracts for plumbing and heating in residences in that town.

Shamway & Riley, Northampton, are installing several new bath rooms in the Smith College. They also have been awarded the contracts for the plumbing and heating in the new annex of the Dixon Hospital, and in two new residences for the Monotuck Salt Co. at Florence.

Mutual Plumbing and Heating Co., at Amherst, has been awarded the contracts for the installation of plumbing in Amherst College, heating in the Kellogg Avenue School, plumbing and lighting in the W. Pelham School, and the heating in the Hodley School.

Mosely & Moschin, of Westfield, have been awarded the contract for the installation of plumbing in the Prospect Hill School, and for the installation of modern heating in the Huntington Mfg. Co.'s plant.

Louis Keefe, of Westfield, is remodeling the plumbing in several residences.

New Hampshire

Building activity is increasing in New Hampshire, but there is still a very great demand for dwellings, particularly in Manchester and Nashua, mill towns, and at Portsmouth, where there are many shipyard workers.

At Portsmouth a $75,000 business block is being erected at Fleet and Congress Streets for D. H. McIntosh. The building will be six stories in height. W. E. Paul, of Portsmouth, has the contract for the installation of the heating system.

Foundations have been put in at Rye Beach for a hotel building for a newly formed corporation, to cost $150,000. It will be four stories high with 60 rooms and 48 baths in addition to kitchens, dining rooms, etc., and is expected to be completed in the spring. The contract for the plumbing has been placed with Roberts & Browning, of Washington Street, Rye, N. H.

THE PROVINCE OF ONTARIO.

Toronto and Vicinity.

W. G. Edge, Toronto, has secured the contracts for the plumbing and heating installations in the Rosedale Military Hospital, and in the Presbyterian Hospital. He will also install modern heating in Neilson's Chocolate Factory and the piping equipment in the Round House.

The R. Bigley Mfg. Co. has enlarged its office and showrooms at 96-98 Queen Street, East, and its plant at 252 McDonnell Avenue, Toronto.

The Fred Armstrong Co., Ltd., 277 Queen Street, West Toronto, has the contracts for plumbing and heating installations in a number of buildings in this city, among them being the installation of a heating system in the Orde Street School.

Purdy, Mansell, Ltd., Toronto, will install plumbing and heating systems in the Canadian Kodak Co.'s plant, Robert Simpson Co.'s Mail Order Building, and in the Toronto Normal School; also in seven school buildings and in the A. G. Garrie Garage.

The Bennett & Wright Co., Ltd., Toronto, will install plumbing and heating systems in the Y. M. C. A. Building, the General Hospital, and the Canadian Grand Electric Plant.

N. G. Edge, Ltd., of Toronto, is now operating a branch establishment at 45 Richmond Street, East Toronto. W. E. Ramsey, formerly associated with Keith's Ltd., of Toronto, is manager of the Toronto office.

Gentle & Travis, of Toronto, will install heating systems in the Jarvis Avenue Bachelor apartments, the York Knitting Mills and the Campbell Flour Mills.

Fred A. Willis, of Toronto, recently moved into his three-story building at 135 Avenue Road. He reports having secured several plumbing contracts, both in the city and surrounding territory.

Charles D. Waldon, vice-president of the Spencer Heating Co., Ltd., Toronto, has just returned from a business trip through Canada and reports a large increase in business over former years.

Building activity in Ontario continues apace, the permits for Toronto alone still continuing to frequently touch the two hundred thousand dollar mark for a single day's permits.

The boom in Windsor bids fair to make it a second Detroit, and the end is not yet.

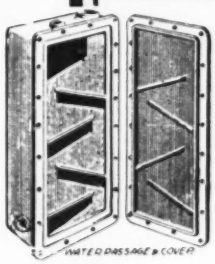
T. B. Smythe, of Toronto, besides being busy with his regular custom work has a large staff busy on a 48-apartment job on Avenue Road.

The same lack of house, apartment, and hotel accommodation that is general throughout the country, is being badly felt throughout the lower parts of the province.

W. J. Hambly, Toronto, is negotiating with members of the Board of Education for the purchase of the property which they at one time intended to use as the site for a Central Technical School. Mr. Hambly's associates are prepared to erect a $5,000,000 hotel, and tentative plans and specifications have already been prepared.

For the last two months of this year the Educational and Entertainment Committee of the Toronto Society of Domestic, Sanitary and Heating Engineers has mapped out a very strong and progressive program along educational lines. Some seventeen meetings will be held in

Increase Your Heater Sales



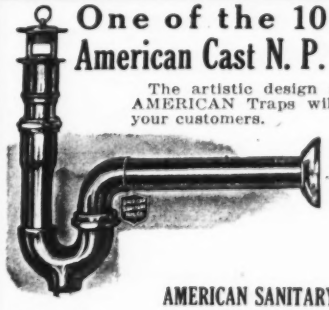
with the Sharp's Cleanout Water Heater. It saves money for your customers and brings good profits to you. Sells readily wherever introduced. Has new and different features from any other type of hot water heater.

Begin now to build up your business. Write for full details.

General Manufacturing Co.
Heater Department
67 19th Street, Wheeling, West Virginia

"Castex"
WHITEST VITRIFIED CHINA
Products such as:
Closet Bowls
Tanks
Specialties
Are Manufactured by
CHICAGO POTTERY CO.
1924-40 Clybourn Ave., Chicago

One of the 105 Styles of American Cast N. P. Lavatory Traps



The artistic design and smooth finish of AMERICAN Traps will appeal instantly to your customers.

Made perfectly smooth inside and out—deep water seal, full sized waterway.

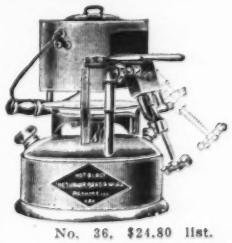
You can depend upon the AMERICAN Line.

Write for catalog.

Fig. 301

AMERICAN SANITARY MANUFACTURING CO.
Abingdon, Illinois
Manufacturers of Fine N. P. Brass Specialties

TURNER TRADE HOT BLAST MARK **No. 36 Bonanza Furnace for Gasoline**



No. 36, $24.80 list.

is made of No. 16 gauge seamless drawn steel, copper plated inside and out and finished with blue enamel. Will withstand severe service and the acid used in connection with plumbing, tinning and electrical construction.

A furnace that will be appreciated by iron and copper workers, plumbers, electricians, etc.

The Turner Brass Works, Dept. D
Sycamore, Illinois

SOMETHING ENTIRELY NEW IN

SILL-COCKS

Semi-Finished, Polished aluminum wheel Style N. Style O—Heavy rough pattern built for service.

STYLE N Both shown in catalog D STYLE O

KINSEY & MAHLER CO. Peoria, Ill.

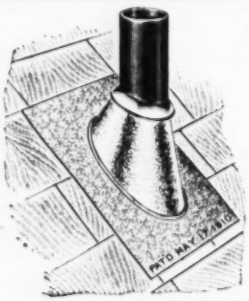
Made For Plumbers
Sold By Plumbers

Parrott Automatic Gas Water Heaters

Our policy is to sell the Parrott Heater exclusively through the plumbers on a basis that nets them profit above overhead costs.

Write for our co-operative sales plan. It will interest you.

Parrott Heater Company, 224 21st Street DETROIT, MICH.



Don't Be Content
With Ordinary Roof Flashings

Specify and Use the Reliable

"SIMPLEX"

Made in
All Lead—Copper—Galvanized Iron
Every Flashing Adjustable
Every Flashing Perfect
Manufactured only by

Simplex Mfg. Company
313 S. Clinton St. Chicago

WATROUS SANITARY PLUMBING FIXTURES DUOJET

A line representing the most advanced ideas in Sanitation, Economy of Operation and Ease of Installations.

Duojet Closets—Flushing Valves—Urinals—Drinking Fountains—Self-Closing Cocks—Liquid Soap Fixtures, Etc.

Manufactured and Sold Exclusively by

The Imperial Brass Manufacturing Co
510 South Racine Avenue, Chicago, Ill.

ASK FOR CATALOG

the two months, and the subjects, which will be handled by well qualified speakers, include Venting Smoke Testing, Sane Hot Water Lay-Outs, Water Engineering and Meters, Sewage Disposal in Large Cities, Country Plumbing, Septic Tanks, House Heating by Gas, Building Bigger Business, Accounting, Salesmanship and Profits, and Municipal Government. Visiting craftsmen are welcomed to these open meetings, and a busy two months lies ahead of the Toronto craft.

Ottawa and Vicinity.

That the present unsettled state in regard to labor, prices of raw material and the uncertainty of delivery of same have reached the stage where plumbing and heating firms are practically confronted with the necessary abolition of the competitive system, as it now exists, is the belief of J. T. Blyth, one of the leading master plumbers of this city. Mr. Blyth states that the trade at present would greatly welcome the adoption of the cost-plus-percentage, or the cost-plus-a-lump-sum policy. The reason for this, it is pointed out, is that at the present time it is almost impossible to quote prices on a building job. Labor is unsettled, prices of supplies are going higher steadily, and there is a marked difficulty in securing deliveries. At the present time, local firms are proceeding very cautiously in accepting contracts. Mr. Blyth states that the proposed change in policy would also be to the advantage of the contract allotter in that just now, through difficulties which cannot be controlled, it is necessary, in accepting a contract, for the plumbing or heating firm to include certain contingencies. Under the cost-plus-percentage plan, these would not be necessary. Much raw material, it is announced, is at present unobtainable.

Jobbing residence work was reported particularly busy by the firm of J. P. Band & Co. Considerable difficulty was being experienced in securing skilled workmen.

Quite a number of contracts, though practically all for residential buildings, were reported on hand by Holloway & Son. This fall, it was stated, had been found considerably better in every way than the same period in 1918.

"COULD WE DO BETTER?"

By K. B. Allison.

The rose exhales a fragrance all its own. As a plant it is cultivated scientifically for its form and color, only because its fragrance is unstintingly given from an unsullied soul within. There is no one who having pleasant recollections of the fragrance of a rose does not acknowledge its beauty, its fragrance, and its purity by the mere mention of the word "roses."

Should our lives not breathe forth to all our fellow beings the same fellowship of good and all that is typified in the word "humanity?" What the world needs is more men and women to live on to the motto "To help, not hurt," or on that grand old golden rule, "Do unto others as you would have them do unto you." Then the world would not be at sixes and sevens, and Bolshevism, greed, and class enmity would have no room for thought, and, then, too, Happiness, the true birthright of all, would be enjoyed by all, and class warfare would automatically cease, so that Rich and Poor, Capital and Labor, would not align themselves one against the other.

Let us view life for its good to the mass, rather than for its profit to the few, and let us try to see eye-to-eye with our fellow man and encourage him to reciprocate, so that harmonious thought and action would be our goal with humaneness as our guide.

VOCATIONAL TRAINING FOR FOUNDRY OCCUPATIONS.

It is estimated that around 200,000 persons are employed in the United States as molders, founders, and casters. This great industrial army employed in our foundries is made up of skilled workers and apprentices, and the industry provides, therefore, in a greater degree than is commonly supposed, a proper field for vocational education. A survey of Indianapolis covering 38 foundries employing over 5,000 employes under normal conditions reveals the fact that approximately 50 per cent of these workers are classified as skilled laborers and 50 per cent as apprentices, says J. C. Wright in "The Vocational Summary."

The foundry industry finds present conditions unsatisfactory. Of skilled labor the supply is inadequate. Many workmen are lacking in technical and mechanical skill, and many of the foremen even are short in the technical information relating to the work under their immediate supervision. They lack ability to supervise production intelligently, to handle men, manage their departments, and control plant practice efficiently.

Lack of Trained Men.

As an indication that the industry is suffering from a lack of adequately trained men, inquiries are being received by the Federal Board for Vocational Education from employers and organizations of employers as to the possibilities of vocational training for their employes. These inquiries have to do not only with the improvement in efficiency of journeyman workers but also with such trade extension instruction as will enable men, straw bosses, and assistant foremen to be promoted to positions of greater responsibility within the plant. This is one special instance of a general tendency. Industry, as a whole, is rapidly coming to realize the need of vocational training to reduce costs and to maintain a sufficient supply of trained men. To meet the demands developing under new conditions more training and an increased application of scientific information, as well as invention and improvement of labor-saving machinery, is essential.

The Need of Vocational Training.

Since the old apprenticeship system has broken down, systematic training for industrial occupations must be given in some other way. People are not naturally prepared by instinct or environment for efficient work in modern industry, and therefore training must in some way be secured by the individual, either previous to his employment or after employment on the job. The first sort of training cannot be relied upon, since to mention only one very sufficient reason most people are unable to predetermine or choose their vocation long enough ahead to enable them to secure adequate preparation for entrance into employment. It then falls upon the employer to provide some method for training his green men—some well-devised method of training by "intention," to supplant the extremely costly and uncertain method of training by "absorption."

It is generally recognized among those engaged in vocational training that certain industries, due to the conditions surrounding the workers, are not such that the novice may be induced to accept training for service. Few men choose the foundry as a vocation deliberately. While foundry work has oftentimes been included in engineering and mechanical arts schools, it has seldom functioned as a part of vocational training. In most cases the foundry equipment has been installed in order to supplement courses in pattern making, and to equip the metal working shops in the institution to more readily obtain castings for their own use. Pupils enrolled in these courses have not, except in rare instances, entered upon employment in the industry. The courses of

Our No. 6-F Youngstown Pattern Trap

is only one of our many styles of

Eagle Anti-Syphon Lead Traps

Made of

Drawn Lead Entirely

and

Lead Burned Joints

Write Us for Descriptive Folder

The Eagle Picher Lead Co.

Cincinnati, O.

Use Products

manufactured by

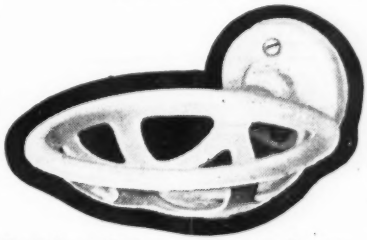
RAYMOND LEAD WORKS

BRANCH UNITED LEAD CO.

735 South Washtenaw Ave. CHICAGO

If Your JOBBER Cannot Supply You With Our Goods, Send Your Orders To Us Direct

SNO-WITE



The cut shown here represents one of our beautiful special design bath room fittings — porcelain enamel on cast iron. An everlasting finish.

Write for catalog and discounts.

C-87 Soap Dish Size 4 in. by 5 in.

American Enameled Products Co.

2118-2128 Prairie Avenue - - CHICAGO

For Good Low Pressure Gaskets

Here's the prescription for gaskets that equal the most expensive packings; Manila paper coated on both sides with

Smooth-on Elastic Cement No. 3

The cost is almost nothing. Get a can of SMOOTH-ON No. 3 from your dealer and prove it by yourself.

SMOOTH-ON MANUFACTURING CO.

Established 1895

570-574 Communipaw Ave. Jersey City, N. J. U. S. A.

Drilling UP Holes

Concrete Ceilings — Through Floors

Any size up to 2½ inches

Round smooth holes, for Expansion Bolts, Through Bolts, Pipes, Risers, Returns, etc.

Typical way of drilling UP holes in concrete ceilings and through floors.

PHILLIPS

Spring Hammer Drill

like the air hammer, is effective in rapidly striking a great number of blows squarely on end of drill.

The Overhead Drill here shown, is self-supporting and automatically follows up as hole is drilled. Operator turns crank. Every bit of energy utilized in blow, drill automatically held in true alignment and contact with work.

Some recent jobs:

One user of this hammer drilled 20,000 holes, ⅜" to 1¼" diameter, 3" deep, in concrete ceiling, for hanging sprinkler system, in U. S. Government Warehouse, Central Manufacturing district, Chicago.

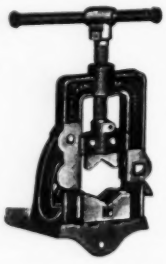
Write for more information

Daugherty-Smith-Phillips Co.

CHICAGO :: ILLINOIS

THE GENUINE ARMSTRONG

HINGED PIPE VISE



Has Been Imitated Many Times But Never Improved on the Original

Manufactured and Sold By

THE ARMSTRONG MFG. COMPANY

284 Knowlton St., Bridgeport, Conn.

New York Office: 248 Canal St.

instruction have in most cases aimed to give the pupil an appreciation of working conditions in foundry occupations and a general knowledge of the processes involved. Even if the character of the instruction offered were of such a nature as to adequately prepare the individual for efficient work as a molder, coremaker, or cupola tender it would still be impossible for the instruction to function as trade training, since the pupils enrolled in these institutions are not selected from those who naturally seek employment in foundry occupations.

Training Men Already Employed.

Any plan for vocational training must recognize two types of instruction—one to prepare new workers for advantageous entrance into an occupation, the other to effect improvement of workers already in service. The problem in the foundry occupations centers around training men who are already employed.

School officials charged with the responsibility of planning schools and classes to give vocational training to workers who desire to improve their condition must consider carefully the possibilities for training in the given line, the kind of schools required, and the subject matter to be included in the course of instruction.

Experience in vocational education goes to show that trade preparatory classes are not as efficient as those giving extension instruction. This is especially true of the foundry industry. In some instances where foundry work is included in schools, evening schools have utilized the equipment for supplementary instruction given to those who have already sought employment in the occupation, and such instruction, it has been found, is effective and valuable.

Evening Schools.

Evening vocational schools are all of a trade extension character, and such schools should be organized in every community, providing opportunities for pupils to select subjects closely related to their daily employment.

Part-Time Schools.

Part-time schools may be organized in different ways—either as vestibule schools or on the co-operative week-about plan. In their relation to the foundry industry they may be either of a trade preparatory or trade extension type. To successfully administer either of the types it is necessary for co-operative agreements to be entered into between the public schools, the employer, and the employe. These schools are defined as classes which divide the working day or school time between instruction in the school and practical work in the shop, factory, home, or office. The classes may be carried on at the school, in the shop, in a building near the shop, in class rooms adjacent to it, or elsewhere. The instruction may be manipulative in process, or related to process, or both. While the minimum amount of instruction per year must not be less than 144 hours, a given course may be offered once, twice, or more times each year, or courses may be operated in rotation continuously, provided the rotation is so arranged that the pupil may profit by the instruction taken in its proper sequence.

The Vestibule School.

The vestibule school is organized when the industry may wish to concentrate the period of training into a single period, giving full time each day to instruction.

The Co-operative Week-About Plan.

The co-operative week-about plan requires two pupils for one job, one of these being in school while the other is at work. During the week in employment the pupil is given an opportunity to apply the instruction received, and through a co-ordinator the instructor in the school is informed of the pupil's progress in the shop. Practical experience is gained through a wide range of commercial projects rather than

through the use of models and a limited amount of practical work.

Vocational training should, of course, be based upon a careful study of the foundry occupations for the purpose of determining specifically:

1. The aim of any courses of instruction to be given.
2. The type of schools in which instruction may most efficiently be given, character of equipment required, and qualifications of teachers.
3. The working conditions affecting employes in foundry trades treated from the standpoint of what the worker is actually required to do, as shown by a first-hand analysis, and not from the position of things as they ought to be.
4. The selection and organization of instructional material.
5. And, finally, suggestive methods of instruction for the guidance of teachers.

These steps are necessary for effective vocational training in any trade or industry.

Foundry workers include the following groups:

Molders: Bench molders, floor molders, brass molders, and molding machine operators.

Core makers, cupola chargers, cupola tenders, foremen, chippers, helpers, helpers and laborers.

An analysis of the occupations represented by these groups indicates that they are, except as regards laborers or helpers, of a character for which vocational training can be given. On the basis of this analysis the following subjects for seven separate short unit courses are suggested:

Course 1. Molding sand.
Course 2. Trade terms, names of tools, etc.
Course 3: Bench molding.
Course 4: Floor molding.
Course 5: Coremaking.
Course 6: Cupola furnaces.
Course 7: Trade science.

Whenever the employers of large numbers of workmen wish to plan for the vocational training of their men, arrangements should be made for co-operative agreement with the public schools in the community. Teaching, like other professions, is an art that is best accomplished by those who have made it their life business to instruct others. Teachers of foundry work in the all-day school and co-ordinators of co-operative classes must have had actual foundry experience in the industry itself. Successful teachers should not only have a practical training at least three years beyond the apprenticeship period, but they should be selected also because of their familiarity with all phases of the occupation and their ability to instruct others. They should be able to analyze foundry occupations and jobs, and to organize the instruction material effectively.

While the use of automatic machinery has made less necessary the highly developed degree of hand skill formerly required, its use has increased the need of mental alertness in order to keep up production and in order to protect fellow workmen from injury. Modern business methods also make necessary an ability on the part of workmen to analyze jobs and operations in order to reduce the time element and to conserve physical energy.

In every state a state board for vocational education has provided for the promotion of trade and industrial education through the schools of local communities. The state agents are specialists with practical industrial experience, and are responsible for giving assistance to the local school officials in planning the types of schools, in selecting teachers and equipment, and for seeing that the instruction is effective. The state boards, the agents, and the Federal Board for Vocational Education are willing to co-operate with repre-

The "Chicago" Automatic Condensation Pump and Receiver

The only Condensation Pump fitted with a horizontal TILTING TANK RECEIVER containing no troublesome floats. The Automatic Apparatus is positive in its action. The pump is equipped with two out board ring oiled bearings, one on each side of the casing, insuring a constant and proper oil lubrication at all times. Write for descriptive bulletin.

CHICAGO PUMP COMPANY
902 West Lake Street
Chicago, Illinois

HORIGAN'S AQUA EXPANSION TANK

THE FUEL SAVER!

It's LOTS BETTER than the regular "2 for 1" proposition.

Coal Is 2—Radiation 1!

It takes two tons of soft coal to heat each 100 ft. of radiation a season in the average Hot Water Job, therefore, if the radiation can be INCREASED without ADDING to the FOOTAGE, or in other words, the temperature of the water raised above 180 degrees and HELD there, something that is done with our AQUA TANK, it being increased at least from 40 to 60 degrees and HELD, makes a **Big Difference in the Coal Pile!**

Therefore, the ratio falls from "2 to 1" to "1 1/3 to 1,"—A **BIG DIFFERENCE!**

Do you get us? or, in other words, 1 1/3 tons of soft coal takes care of each 100 ft. of radiation, in most States, per season.

Price $35.00 Net, F. O. B. cars, St. Joseph, Mo., with full freight allowed to any railway station in the United States.

HORIGAN SUPPLY CO.

415 South 4th Street St. Joseph, Mo.

CLEVELAND FLUSH-VALVE

Simple Sanitary Satisfactory

Designed for general use, and especially where hard usage is unavoidable. Lever or push button action.
Write for our Special Sample Valve Offer.

Cleveland Flush Meter Company, Noble Court and W. 2nd St. Cleveland, Ohio

HOFFMAN VALVES

more heat from less coal

An air venting valve for every service—made entirely of metal; absolutely automatic; absolutely non-adjustable. Guaranteed for five years. Write for catalog.

HOFFMAN SPECIALTY CO., Inc., 512 Fifth Ave., New York City

The Plumbers and Steam Fitters **Price Guide**

With Price Revision and Market Bulletin Service
Gives You "Up-to-the-Minute" Price Information
Write for Particulars

BAREHAM & SAUNDERS 366 East Main Street, ROCHESTER, N.Y

"NATIONAL" Welding-SCALE FREE Pipe

Another "NATIONAL" Achievement of special interest to plumbers.

Ask for "NATIONAL" Bulletin No. 7 — Manufacture and Advantages of "NATIONAL" Welding-SCALE FREE Pipe

NATIONAL TUBE COMPANY PITTSBURGH, PA.

STAR NACO BOILER

DOUBLE SEAL WELDED AND RIVETED

The Sturdiest Range Boiler Made

SEND FOR CATALOG

Detroit Range Boiler & Steel Barrel Co., Detroit, Mich.

Branches: New York San Francisco Chicago St. Louis
Plants: Toledo Detroit

Brass and Copper Tubing

Seamless Drawn

Iron Pipe Sizes—Special Mixture if Desired

Crescent Brand Tubing is used exclusively in Wheeler Condensers. It is of special value to the plumbing trade. When QUALITY tubing is wanted always specify CRESCENT Brand.

Wheeler Condenser & Engineering Co., Carteret, N. J. 47

K-K Cleans Closet Bowls

"The Sanitary Way"

Shake a little into bowl, let remain a few minutes, then flush. Leaves bowl and trap free from stains and odors.
K-K is scientifically prepared for this purpose only—not a general cleaner.
Keep a supply on hand—your trade wants it.

The Chamberlain Company

Manufacturing Chemists - - - - - Pittsburgh, Pa.
Use "Desolvo" for Cleaning Clogged Pipes

Plumbers Specialties

Brass Goods for the Plumbing Trade

Closet Tank and Seat Trimmings, Connected Waste and Overflows, Traps, Supply Pipes, etc.

Any Reliable Jobber can furnish the "Femco" Line from stock

Frost Manufacturing Co., Kenosha, Wis.

sentatives of the foundry industry in meeting the need for better-trained men, in an industry which is generally recognized as being one of the most essential and basic

OVERHAULING THE PLUMBING IN AN OLD COLONIAL MANSION.

(Continued from Page 323.)

Figuring It Out.

"Of course, we have to make the capacity of the upper drains equal to the capacity discharged by the siphon or more. I prefer to make it nearly double, if we can get enough piping in. Let's figure it. The 6-inch line running the length of filter bed contains 4 cubic feet.

"If we lay the 4-inch tile on 22 to 24-inch centers, we can get 100 to 120 lineal feet in each filter. That will contain 10 cubic feet more. The distributing tile therefore has a capacity of 16 cubic feet, or more than twice the capacity of the siphon chamber.

"Now, you see that the distributing tile will never become full of water and the siphon will always be able to discharge freely."

"Never become full of water," interrupted Si. "What happens if the filter becomes choked?"

"It won't choke, if the caretaker switches the effluent over to the other filter periodically, as he will be instructed," replied Jones; "and he will be instructed, for the instructions will be printed on the chart we propose to frame and hang up in the basement or pump room."

"But how does that resting period regenerate a sewage filter?" asked Si, evincing considerable interest.

"By allowing the filter bed to dry out and by permitting air to get in between the particles of sand. In fact, we are designing the system so that air may ooze slowly through the filter bed while at rest.

"The air apparently kills the bacteria which tends to clog the filter bed, and so keeps the pores open. That is not scientific language, you know. It is plain practical language that we can understand. Anyhow the air does the work and all we have to do is to have the sand coarse enough, which I certainly will see to."

"Now about the switching process," continued Jones. "I will sketch how that will be done." (He sketched Fig. 2.)

"The sewage from the septic tank siphon flows into this thing marked 'switch box.' It is a brick or concrete box about 12 inches by 24 inches, having two openings in the bottom, which are the inlets to two 6-inch bends.

"One runs to filter No. 1. The other runs to filter No. 2. There is a wooden plug, or a brass screw cap, to close either one of these bends. Thus the sewage may be diverted to either filter, or to both as circumstances may require. The caretaker will have to see to this box, say, once a month, during the summer only. The two inlet pipes from filters join together at another box, which I call inspection hand hole. From there it runs to the creek. Each box has a close fitting, removable, cover. Now go ahead and make these drawings."

(To be continued.)

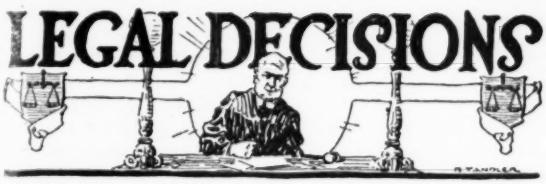
External Evidence.

An attorney was examining a witness and chanced to ask him about the character of the dead man who figured in the case, to which the witness replied:

"He was a man without blame, beloved and respected by all, pure in all his thoughts, and——"

"How did you learn that?" demanded the judge.

"I read it on his tombstone.—Los Angeles "Times."



Payments Advanced on Contract to Sub-contractors—Default of Contractor and Resulting Liabilities.

An action was brought to recover from the surety upon a bond given to the owner of real estate to secure the faithful performance of a building contract. The contractor partly finished one building, but failed to begin another. The Supreme Court of New York laid down the law applicable in the following summary (Elmohar Co. v. Phillips et al., 176 N. Y. S. 440).

As to the discharge of a surety by payments to sub-contractors, the court said that where a building contractor gave bond for performance, and the contract provided for payments in installments, payments by the owner on the contractor's order to sub-contractors upon security of an unmatured installment, which was never earned, were not advance payments to the contractor, but in effect loans, and did not vary the contract or injuriously affect the surety, so as to release such surety.

Further it was held where a building contract provides that, if there is not sufficient material on the premises, the owner may in case of default after three days' notice to the contractor to furnish material, purchase same himself, such owner cannot hold the contractor or his surety liable for material purchased, where no such notice was given.

Regarding the waiver of time for performance of the contract, it was held that where a building contract provided for completion by a fixed day, and the owner notified the contractor of failure to comply therewith, the contract was not thereby terminated, where the contractor continued the work and the owner made payments thereafter, thus waiving the default.

As to the completion of the building by the owner, the court held that where, upon the order of the building contractor, the owner made payments to sub-contractors before giving notice as required by the contract that it would complete the building, owing to the contractors' default, such payments cannot be recovered by the owner from the contractor, or his surety, as part of the cost of completion of the building after default.

Sub-contractor is Entitled to Lien on Money Due the Contractor Under the Illinois Statute.

That a sub-contractor has no lien on the premises if the contract between the owner and the principal contractor negatives it, but that the sub-contractor is entitled to lien on any money in the owner's hands due to the contractor, under the Illinois statute, has been decided by the Illinois Supreme Court (286 Ill. 209).

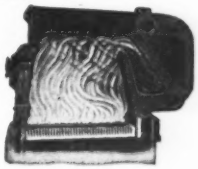
In this case the defendant contracted in writing for the alteration of her building. The contract provided as follows: "It is agreed that the contractor, when these premises are offered for acceptance shall be delivered free and clear from any lien or encumbrance whatsoever. * * * It is further agreed and binding that no sub-contractor, as well as the contractor, shall have a right to place a lien on said premises." (The words are as reported.)

The plaintiff furnished material, etc., as a sub-contractor and later served a sub-contractor's notice on the owner of the premises, afterwards bringing suit against both the owner and the contractor for recovery of its claims. A

Heat Hints

For real down-right satisfaction.

Use Bernhard Boilers



They mean pleased customers and successful installations.

Write for new catalog and testimonial folder.

KANAWHA MFG. COMPANY
175 W. Jackson Blvd., Chicago
101 Park Avenue, New York City Charleston, W. Va.
Michigan Representative: G. V. Hepburn, 25 Rochester Place, Grand Rapids, Mich.

APEX

Our half-page announcement in last week's issue of "Domestic Engineering" covers the special features of the Apex Non-Overflow Closet. Did you read it?

Apex Sanitary Specialty Co.
Trenton, N. J.
Spokane, Wash., Eagle Bldg.

Champion Auxiliary Boiler

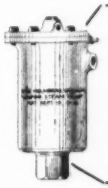
Fits any hot air furnace. Increases heating capacity. A business-getter and profit-maker. Try it.

Order from Your Jobber
or write to
Frank D. Stolz Co.
3127 N. Clark St. CHICAGO

Fig. 100—Steel Floor or Ceiling Plate

TRADE MARK CENCO REG. U.S. PAT. OFF.

Floor and Ceiling Plates
Pipe Hangers, Clamps and Specialties
Write for New Catalog and Prices
C. ERWIN NORMAN & CO.
Manufacturers
14-16-18 W. Kinzie St., Chicago, U.S.A.



Holmberg Trap
For Vapor and Steam Heating

Does away with radiator air valves.
Is installed next to boiler. Ejects all air from heating system, but will not permit any steam or water to escape nor allow air to re-enter.
Capacity 1,000 feet.
Absolutely guaranteed.
Write for illustrated booklet.

John A. Holmberg, Lindsborg, Kan

"Sirocco"
TRADE MARK

Let Sirocco Engineering service solve your ventilating, heating and cooling problems. Send for catalog.

American Blower Company
Detroit, Mich.

STERLING SYSTEMS
Vacuum and Vapor Heating Specialties

Thermostatic Traps—Air Line Valves—Graduated Supply Valves—Air Eliminators—Damper Regulators

STERLING ENGINEERING COMPANY
Milwaukee Wisconsin

Install a **Paul Money Maker Demonstrator** in your show window and watch the crowds gather.

It is a complete water system which you may demonstrate to your customers under actual service conditions.

Write us for full particulars.

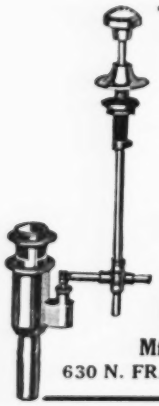
Fort Wayne Engineering & Mfg. Co.
1712 Harrison St. FORT WAYNE, IND.

HARTMAN INGOT METAL

H.M.M. CO.

SHIP US YOUR SCRAP METALS

2511-2525 West 21st Street
CHICAGO, ILL.



The ALLINGHAM
DIRECT LIFT
Pop-Up
BASIN WASTE
The Old Reliable With an Established Reputation
Manufactured by
GOETZ BRASS CO
Mfrs. Plumbing Brass Specialties
630 N. FRANKLIN ST. CHICAGO, ILL.

Tank Fittings of Quality

1856 **"McSHANE"** 1919

The ORIGINAL Compound Lever Ball Cock, Elevated, Low-Down, Top and Bottom Supply. Tank Levers and Valves.

McSHANE BELL FOUNDRY CO.
BALTIMORE, MARYLAND

jury in the trial court returned a verdict against the sub-contractor, but the Appellate Court overruled this and allowed the sub-contractor a mechanic's lien on money held by the owner of the premises and due the contractor. This lien was created by section 21 of the act to revive the law in relation to Mechanic's liens. That section provides that every sub-contractor shall have a lien "from the same time, on the same property as provided for the contractor, and also, as against the creditors and assignees and personal and legal representatives of the contractor, on the material, fixtures, apparatus or machinery furnished, and on the moneys or other considerations due or to become due from the owner under the original contract."

The lien of a sub-contractor can exist only by virtue of the original contract, and in case such contract provides that there shall be no lien upon the premises improved for labor performed or material furnished, a sub-contractor is not entitled to any lien, said the Supreme Court. It was provided by the quoted provision of the contract that there should be no lien against the premises and therefore the sub-contractor was not entitled to any lien on either the building or anything furnished for the improvement. But the contract did not provide that there should be no lien on moneys due or to become due from the owner to the principal contractor, and if the plaintiff sub-contractor had such a lien it was not barred from enforcing it by any provision of the contract.

The statute does not in specific terms create a lien on moneys in the hands of an owner to which the contractor has become entitled, except as against creditors and assignees and personal and legal representatives of the contractor, said the court. It provides that the lien on moneys due shall be superior to the claims of certain classes of persons, and the case presents the alternative that the legislature intended to create a lien or made a useless and senseless declaration that something which had no existence should be superior in right to certain other claims against the contractor. Therefore the court said it seemed clear that the legislature intended that a sub-contractor should have a lien on moneys due the contractor, in spite of the rule that the statute in relation to mechanic's liens, being in derogation of common right, is to be strictly construed, and to say that a right claimed under the statute is doubtful is substantially tantamount to saying that it does not exist.

Contractor's Bond Held Liable to Third Parties Who May Be Beneficiaries by Its Terms.

The court passed on a number of important legal principles in the case of the consolidated suits of several creditors against a contractor and his bond (97 S. E. 732). It appeared from the facts in evidence that the owner contracted with the defendant to supply the material and construct six houses on a designated site and according to certain plans and specifications, the same to be completed by the 15th day of June, and, in case of failure to deliver the completed buildings at that time, to pay the owner a daily rental of an agreed amount on each uncompleted house until delivery of the entire work included in the contract; that said contractor gave bond in the sum of $10,000, executed by the American Surety Company, guaranteeing the faithful performance of the contract, stipulating, among other things, that the bond should be liable for payment of labor and material provided for in the contract and containing other stipulations and conditions; that some time in September the contractor having failed to complete the work and being unable to carry it to completion, the owner took over and completed the work. Various claimants, for work and material furnished the

contractor while the work was going on, and unpaid for, sued the contractor and his bondman for their damages.

The surety company denied liability on each and all the claims setting forth certain defenses arising under conditions of the contract, but the trial court found against the contractor and on the bond for the amount of the claims.

The court said it was the well established principle that the beneficiaries may recover on a bond of this character, such being, usually, laborers and materialmen, when there is express provision to that effect, or when it appears by fair and reasonable intendment, that these rights and interests were contemplated and being provided for. Guaranty on indemnity bonds of this character are regarded under well considered authority as being in the nature of insurance contracts, and, for like reasons, subject to similar rules of interpretation.

By provision in the contractor's bond with the owner that "This bond is to be liable for payment of labor and material," this protected claims for labor and material furnished by third parties, since such bond may be made directly liable to claimants.

It was attempted to bar recovery on the bond under stipulation therein against recovery for damages accruing after a certain date, but the court held that this referred to suits to recover damages which might accrue after said date, and would not bar an action brought after that date for damages accruing prior thereto.

DO YOU KNOW?

Do you know the young fellow who works for $25 a week and who is wearing a new winter suit that cost $85?

Do you know the wage earner who loafs because he is afraid, if he does too much, he'll "work himself out of a job?"

Do you know the housewife who is ashamed to be seen with a market basket on her arm or to carry home a brown paper bundle?

Do you know the manufacturer who, when the price of raw materials and overhead goes up 5 per cent and the cost of labor advances an equal amount, adds twenty-five per cent to the price of goods?

Do you know the factory girl working for $18 a week who is buying and wearing a $350 fur coat?

Do you know the man who lets a fresh clerk sneer him into buying a $15 hat, for fear he'll seem "cheap," when he can buy a satisfactory one for $7?

Do you know the investor who has traded his Liberty Bonds for a promise of a hundred per cent profit in a stock company backed by a dishonest promoter?

Do you know the married couple who do not think enough of their children to buy War Savings Stamps for them and to teach them to save?

Do you know the shopper who says "Wrap it up" instead of "How Much?"

Do you know the person who lets the desire of the moment destroy the results of days and weeks of thrift and saving?

Do you know the man who thinks it is not necessary to save?

Do you know the man who says that the government savings securities, Liberty Bonds, War Savings Stamps and Treasury Savings Certificates are too slow or too small or too old fashioned for his investments?

If You Do, You Know Pretty Well What Is the Matter with the United States.

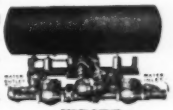
Buy W. S. S.

Are you preparing for Christmas business?

Here's The Farnsworth Double-Action Feeder!

The Farnsworth Duplex Boiler Feeder is the only machine of its kind on the market for returning condensation to boilers under pressure at a high temperature. It feeds continuously, one chamber feeding while the other chamber is receiving.

There are 12 styles and 25 systems—one to handle the condensation problem at your plant.



WRITE FOR CATALOG

This shows the machine which is saving steam plants from 1 to 10 tons of coal per day.

"The greatest coal saver ever offered the steam plant."

FARNSWORTH CO. Conshohocken, Pa.

Engineers and Manufacturers of Condensation Pumps

NIEDECKEN MIXER

For
Shower
Lavatory
Bath
Sink
Etc.

Write for Bulletin D-10-X

HOFFMANN & BILLINGS MFG. CO.
MILWAUKEE

HAYNES SELLING COMPANY

Heating Specialists

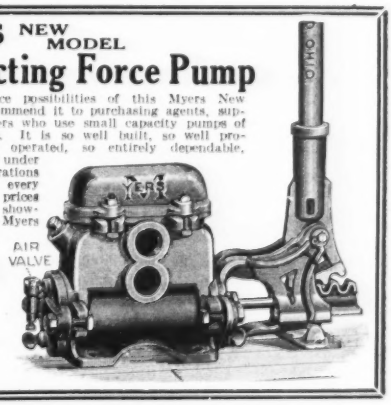
Modulated and Vacuum Heating Systems Adapted for all Types of Buildings

Over 25 Years' Experience

1711 Sansom Street Philadelphia, Pa.

MYERS NEW MODEL Double Acting Force Pump

Knowing the service possibilities of this Myers New Model Pump, we recommend it to purchasing agents, superintendents and others who use small capacity pumps of the Low Down Type. It is so well built, so well proportioned, so easily operated, so entirely dependable, that it will stand up under severe pumping operations and give satisfaction every time. Circular and prices on request. Catalog showing complete line of Myers Pumps if you desire.



F. E. MYERS & BRO.
70 Orange St.
ASHLAND, OHIO

A Handy Tool for the Plumber

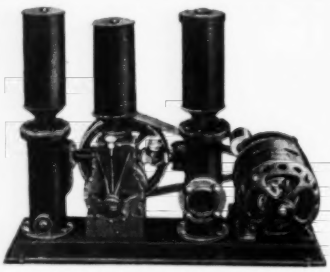
Our No. 2 "Handy Vise" has same quick acting mechanism as the larger Hull vises. The open side is most convenient for use in close or cramped quarters.

Adjusts instantly to any size pipe from ⅛ to 2 in. without using screw. Light and easily carried.

Your equipment is not complete without it.

See your jobber or write.

Columbus Machine Works Columbus Indiana



A VACUUM pump which will maintain 20 inch vacuum and discharge against 20 pounds boiler pressure.

Simple, sturdy, silent.

Bulletin 3-C describes it.

THOMPSON MANUFACTURING CO.
DES MOINES, IOWA

Where specifications call for a high grade shampoo fixture, you can safely install

The "S & K" Rainbow

C-955 is one of our latest models. Quick action. A time-saver for the operator. In ordering, specify distance from center of cock holes.

Manufactured by

Street & Kent Mfg. Co.
549 Fulton Street
Chicago Illinois

Eastern Representative:
J. W. Gannon, 30 Church St., New York City.

Pacific Coast Representative:
Wm. P. Horn Co., Rialto Bldg., San Francisco, Calif.

C-955
Basin Cocks
Quick
Compression

Closet Tank Satisfaction

depends much upon the fittings. The manufacturer takes no chances when he equips his tanks with

"INBRACO" BALL COCKS
FLUSH VALVES AND
TANK TRIMMINGS

They always make good. Be sure the closet tanks you buy are equipped with "Inbraco" Fittings.

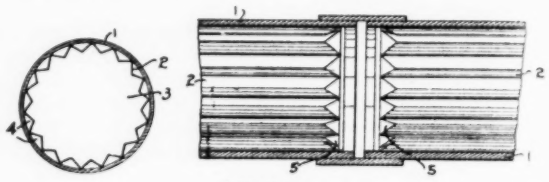
Manufactured by

THE INDIANA BRASS CO.
FRANKFORT, INDIANA

Patents

Plumbing Department.

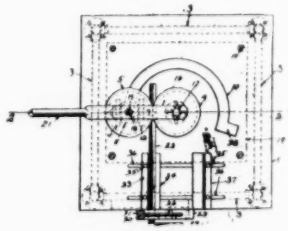
1,304,036. Antiburst-Tube for Lining Water-Pipes. William Eshelby, of Calgary, Alberta, Canada. An antiburst lining tube adapted to be inserted into an ordinary water pipe, said tube being metallic and having longitudinal corrugations, the outer portions of the said corrugations engaging the inner service of the pipe, the ends of the lining tube being circular and of a diameter equal to the interior diameter of the pipe and being welded or soldered to the inner surface of the pipe whereby to retain an air cushion between the tube and the pipe.



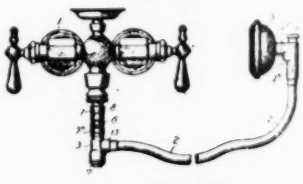
1,304,036.

1,314,067. Automatic Shut-Off for Stand-Boilers. Charles O. Larson, Sioux Falls, S. D. In a stand boiler, an inflow pipe, a draw-off pipe, and an outflow pipe to a heating area, said inflow pipe terminating over the outflow pipe and said outflow pipe having its upper edge cut on a bias to form a valve seat, a pivoted valve mounted to engage the seat for partially closing the outflow pipe, and means carried by the valve normally holding the valve open.

1,314,067.



1,319,987.



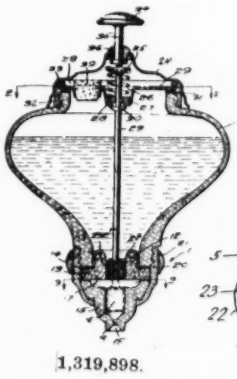
1,319,738.

1,319,987. Pipe-Bending Machine. William H. Beers, Portland, Ore. In a pipe bending machine, the combination of a table having a curved slot therein; a grooved former concentric with the slot; a sheave; a bearing pin for the sheave, said pin extending through the slot; a swinging mounting for the bearing pin having a pivot at the axis of the former; a roller secured to the mounting and operating on the underside of the table at the side of the slot; and devices for holding the roller in alinement with its direction of travel.

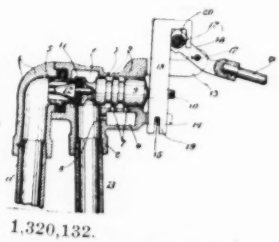
1,319,738. Shower-Head. Earl G. Watrous, Chicago, Ill.

A bath shower adapted to be attached to a faucet, comprising a casing, means for connecting the casing to the faucet, a sprinkler head, a hose connecting the sprinkler head and casing, a manually operable valve in the sprinkler head, and a valve in the casing automatically operable to open to permit the faucet to discharge directly through the casing when the valve in the sprinkler head is closed, substantially as described.

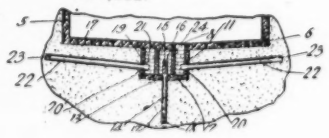
1,319,898. Liquid-Soap Dispenser. Charles E. Post and Paul G. Wagner, Los Angeles, Calif. A liquid soap dispenser comprising a reservoir having a cylindrical discharge orifice at its lower end, an air chamber below the same, and a cylindrical container for a predetermined volume of soap below said air chamber axially alined with said orifice, the last named container having an unobstructed minute discharge opening, a piston reciprocable and normally disposed in the cylindrical discharge orifice and snugly fitting the same and adapted to be depressed to pass out of the same and into the container to forcibly eject the contents of the latter and at the same time permit passage of soap from said reservoir into said air chamber and upon its return stroke permit passage of air from said air chamber into said reservoir, the said return stroke causing air to fill said cylindrical container and pass into said air chamber whereupon soap will flow from the latter into said container to substantially refill the same.



1,319,898.



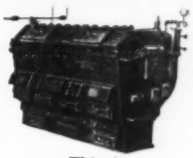
1,320,132.



1,320,256.

1,320,132. Ball-Cock. Allen R. Gilmore, St. Louis, Mo. A ball cock comprising a housing containing a water-receiving chamber, a plunger chamber communicating with said water-receiving chamber, and a sediment chamber in communication with said plunger chamber and having communication with the outlet from said water-receiving chamber; and a valve plunger operable in said plunger chamber, said plunger being grooved annularly to provide for the formation of a water ring around the plunger from which water entering the plunger chamber may pass to said sediment chamber.

1,320,256. Drainage System for Concrete Cellars, Vaults, Basements, Etc. Coleman Y. McLeod, Clarksdale, Miss. In a draining system for cellars having an inclined floor, and having a central drain opening, a catch basin disposed under the drain opening, said catch basin including outer walls, an interior auxiliary chamber having walls of porous material spaced from the outer walls to provide a receiving compartment, means for discharging fluid into the receiving compartment, a pipe having one of its ends extending into the auxiliary chamber, the opposite end thereof extending into the ground surface under the cellar, and each end of said pipe having openings to permit a flow of fluid therethrough.

ECONOMY  EFFICIENCY

This is a

Pierce Down Draft, Magazine Feed, Smoke Consuming, Heating Boiler

Saves Fuel Labor

Manufactured only by

PIERCE, BUTLER & PIERCE MANUFACTURING CORP.

Brooklyn, Boston, Worcester — NEW YORK — Detroit, Syracuse — Philadelphia, Baltimore, Washington

WOLVERINE TAP PLUGS

Quickly and easily repair leaks in Boilers, Radiators, Iron Pipe Fittings, etc.

All tools needed are a hammer and wrench. The Plug cuts and taps its way through.

See page 307, Catalog H.

"Built to Maintain a Reputation"

WOLVERINE BRASS WORKS

GRAND RAPIDS, MICH.

Wolverine Co., Inc., New York, N. Y. — Wolverine Brass Works, Inc., San Francisco, Calif.

HOT WATER

Without Additional Cost

Show your customers how they can cook meals and heat water at the same time by using the

ELLIOTT Combination Water Heater and Gas Stove Top

Made in sizes to fit on top of any gas range. Not necessary to place boiler close to range. Can be attached to oil stoves if desired.

Most economical means of heating water ever devised.

Write for interesting proposition to plumbers.

State Rights Offered to Reliable Men. Write Today

Elliott Water Heater Co., Inc.

1246 Myrtle Ave., Brooklyn, N. Y.

FOR lasting quality and true capacity use "KOVEN" Pure Iron, Double Row Riveted, Galvanized Range Boilers, or NACO Galvanized Range Boilers made of open hearth steel. These boilers may be bought of jobbers everywhere.

L. O. KOVEN & BRO.

50 CLIFF STREET NEW YORK

Classified Advertisements

The charge for advertisements under this heading is 6 cents a word, including heading and address; $1.00 minimum. To insure insertion, copy and remittance should reach us by Wednesday morning.

Situations Open

WANTED—PLUMBER. UNION SHOP. Eight hour day. Steady work. W. H. Seibert, Donora, Pa. 11-15

WANTED—GOOD ALL AROUND RELIABLE plumber. Union shop, steady work. Address 2735, care "Domestic Engineering," Chicago. 11-15

WANTED—PLUMBERS FOR OPEN shop conditions—good pay, ideal climate, best of schools. Practically steady work for competent man. Write for information. A. E. Hancock, Secretary, Austin, Texas. 11-15

WANTED — JUNIOR DRAUGHTSMAN to learn heating and ventilating engineering—Best of opportunities. State experience and salary wanted to start with and send sample of work. Moline Heat. Engineering Dept., Moline, Ill. 10-11-tf

SALESMEN WANTED — WE WILL have two positions open on January 1, 1920, for salesmen to travel Iowa and Southern Wisconsin. To those having a knowledge of the heating and plumbing business and ability to secure business with the full co-operation of this company, these positions are open. Salary increases based on ability to produce. Our company is well known. Address 2733, care "Domestic Engineering," Chicago. 11-1-8-15

For Sale.

FOR SALE—ONE TOLEDO DIE STOCK cutting 2" to 4". One Beaver square knife ratchet cutter 2" to 4". One small Beaver cutting ½" to 2". Used on one job only—some dies never used. $100.00. Daniel J. Furey, 318 W. Washington Ave., Elmira, N. Y. 11-15

FOR SALE—NO. 2 ARMSTRONG VISE, No. 1 Trimo cutter, No. 3 Ideal chain wrench, No. 5 Beaver square-end pipe cutter. No. 52 ½ Hart's Duplex die stocks R. & L. All nearly new, at bargain. Willard F. Warstler, New Paris, Ind. 11-15

Miscellaneous.

SELL YOUR SURPLUS COUPLINGS and fittings. Write us. The A. & J. Mfg. Co., 557 W. Lake St., Chicago. tf

BIN LABELS FOR WATER, GAS AND steam, plumbers' stop valve tags, price cards, metal card holders. Send for samples and prices. Haddon Specialty Co., Haddon Heights, N. J. 10-18-tf

TIME SHEETS, JOB TICKETS, ESTIMating blanks, illustrated stationery, blotters, etc. for plumbers. Reasonable. Send 5-cent stamp for postage on samples. Prompt service. P. Fink & Sons, 56 N. 7th St., Philadelphia, Pa. 8-2tf

Government Proposals

TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C., November 7, 1919.—Sealed Proposals will be opened in this office at 3 p. m., December 2, 1919, for remodeling the electric freight elevator in the United States Post Office, Court House, and Custom House at Providence, R. I., in accordance with specification, copies of which may be had at this office, in the discretion of the Supervising Architect. Jas. A. Wetmore, Acting Supervising Architect. 11-15-22

Books for Your Trade Library.

HEATING AND VENTILATING. By Prof. John R. Allen and J. H. Walker. The most complete up-to-date book published covering this subject. Designed for use in the engineering and technical schools, also for the heating engineer and architect. Size 6x9 in. 306 pages. Cloth. Price, $3.00. Covers plumbing, heating, ventilating and mechanical refrigeration.

PRINCIPLES AND PRACTICE OF COST ACCOUNTING. By F. H. Baugh. Presents a modern method of accounting for the plumber and steamfitter. A text and form book for those who would become expert in keeping track of selling costs, overhead expense, depreciation, administrative expense, etc. Illustrated by numerous forms. Size 6x9 in. 194 pages. Half leather. Price, $3.00.

SANITATION IN THE MODERN HOME. By John K. Allen. Explains the proper arrangement and equipment of bath room, laundry, kitchen, etc. A suitable book to present to your customer or prospective one. Size 5½x8 in. 272 pages. Cloth. Price, $2.00.

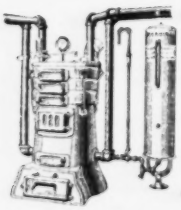
JOHNSON'S HANDY MANUAL. By John W. Johnson. The author is a practical plumbing and heating man, having spent many years in workshops and has superintended the installation of plumbing and heating systems of all descriptions. Eight editions of this popular book have been exhausted. The ninth is just off the press. Size 4x6¾ in. 398 pages. Cloth. Price, $1.25.

Domestic Engineering
407 S. Dearborn St., Chicago

NOTES ON HEATING AND VENTILATION. By Prof. John R. Allen. *Third Edition.*

This book is a resume of lectures delivered to classes in heating and ventilation at the University of Michigan It is written primarily for steamfitter and designer of heating systems. Reduced to as brief a form as possible, so that readers can readily find notes or data desired. Bound in cloth 5⅛x8⅛ inches; 226 pp.; postpaid, $2.50.

Address: **DOMESTIC ENGINEERING, 407 S. Dearborn St., Chicago**

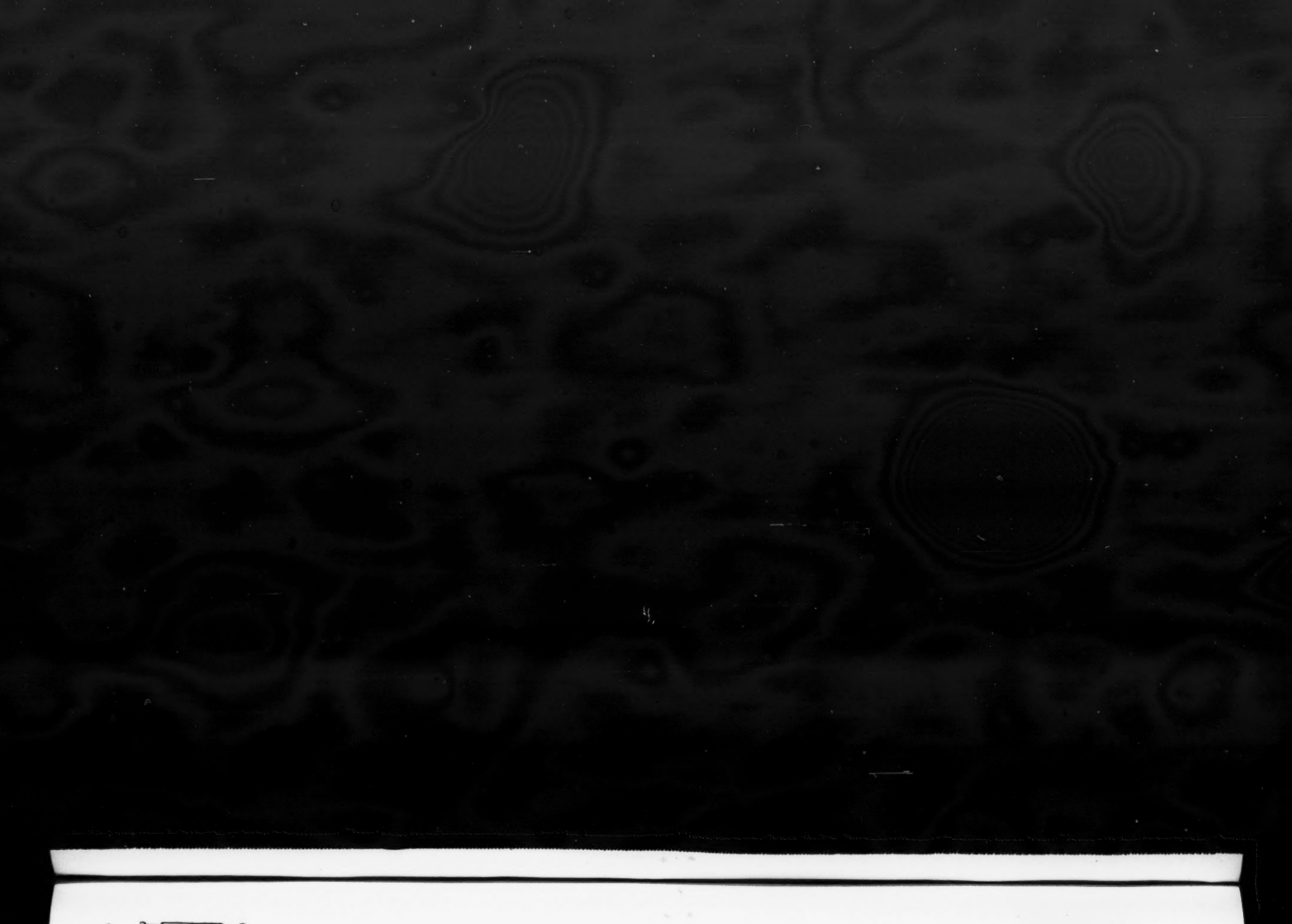


"READING" Tank-in-the-Basement System

has proven its superiority by years of efficient, satisfactory service.

The use of "READING" Specialties insures economy in fuel and uniform heat—two points that make the steamfitter strong with his customers.

Write for Booklet and more details.

THE READING HEATER & SUPPLY CO., INC. **Reading, Pa.**

"Pittsburgh"
AUTOMATIC GAS WATER HEATERS
PITTSBURG WATER HEATER COMPANY - - - PITTSBURGH, PA.